A Post-Graduate Lecture

ON

INTERMITTENT CLOSING OF CEREBRAL ARTERIES:

ITS RELATION TO TEMPORARY AND PERMANENT PARALYSIS.

BY WILLIAM RUSSELL, M.D., F.R.C.P.EDIN.,

PHYSICIAN AND LECTURER ON CLINICAL MEDICINE, ROYAL INFIRMARY, EDINBURGH.

GENTLEMEN,—I have been seeking a new word to express the kind of vessel action that I propose to speak to you about this afternoon, but I have failed in the search. Many of you must know the term "intermittent claudication," which has had a place in medical literature for about eighty years. It was introduced from veterinary medicine, where it was first used to describe recurring attacks of lameness or limping, with pain in the affected limbs, which occurred in a mare, and were due to obstruction to the arterial blood supply when the muscles were put in vigorous action. In human medicine the term has always carried with it the conception of loss of power as a result of the closing of arterial channels. A record of mere limping in a horse would be of no more interest to the veterinarian than to us; it was the *cause* of the limping that was of interest; it was this that led to the introduction of the term into human medicine. It is this association of effect and cause that makes the term of interest to us. I have tried to manufacture a new word from "claudĕre," to close, like "claudication," which is derived from "claudēre," but have not succeeded, and so I use the simple word "closing."

I ask your attention to a corresponding loss of brain power due to intermittent closing of cerebral arteries, as it is seen in temporary paralysis, and as it takes a part in the production of permanent paralysis.

As illustrating the subject, I give you briefly, in mere outline, the salient points in the case of a patient who was in my male ward in the Royal Infirmary from March 5th to 31st.

Mr. M., aged 50, a farmer, was admitted for observation. The history was that during the months of May, June, and July, 1908, he had three attacks, characterized by tingling in the right arm and hand, a stiff and numb feeling in the right side of the face, and difficulty in articulating. In August he had an attack of complete loss of power on the right side, and stumbling speech. During this attack the symptoms passed off and again returned. Within ten days he had three similar attacks, but not so severe as the first. In November and December he had slight attacks. In the end of December he noticed that when reading he could not see the beginning and the end of a long word. This eye condition led him to consult Dr. Wilson Black of Inverness, who kindly sent me a report on the condition of the eyes, and I show you the perimeter chart of the field of vision at that time. There was a right homonymous hemianopia, but not of the entire right half of the field, only of its outer half.

On admission, the patient weighed 13 st., looked robust and well nourished. The pulse was 84, regular, and of moderate force, brachial pressure was 210, the vessel wall was thick, but not tortuous. The heart dullness extended to the nipple line. The amount of urine passed in twenty-four hours measured from 50 to 60 ounces; the specific gravity was 1020, and it contained a trace of albumen, but no casts were found. The blood was rich in quality. There was no trace of paresis anywhere, no alteration or loss of the ordinary or of any of the special senses. The reflexes were all normal. Speech was clear. The field of vision in both eyes was normal. Dr. Arthur Sinclair, who examined the eyes, found in the left fundus an area of slight local oedema.

In this patient the symptoms may be summarized thus: Extending over a period of three months there were recurring *premonitory* symptoms; in one month there were four attacks of hemiplegia or of hemiparesis, during which time he was medically treated; slight recurrences of premonitory symptoms; and, finally, a temporary and partial right hemianopia. From all these he had recovered by the time he was admitted to hospital, and during his sojourn there there was no return of the symptoms. He had slight digestive disturbance when admitted, which was readily rectified. The arterial pressure varied between 188 and 234. An exclusively milk diet for some time, the administration of iodide of potassium in 10-grain doses thrice daily, and free action of the bowels made no permanent impression on the haemomanometer readings. On leaving hospital the diet was regulated, and when I last heard of him there had been no return of the special symptoms.

CAUSES OF SUDDEN HEMIPLEGIA.

Before discussing this case, let us look at the causes of sudden hemiplegia or hemiparesis. They are haemorrhage, embolism, thrombosis, and, I add, temporary closing of cerebral arteries. The effects of these are, in the case of haemorrhage, laceration of brain tissue; in the cases of embolism and thrombosis, necrosis and softening of brain tissue. In both laceration and softening there is no restoration of destroyed brain tissue. In temporary closing of arteries there is impairment of function in the part of the brain affected—a halting of brain function from closing of the channels which convey the blood, a condition comparable to intermittent claudication.

DIFFERENTIAL DIAGNOSIS.

Embolism.

Turning to the question of differential diagnosis, a diagnosis of embolism requires at least the coexistence of mitral or aortic disease, or disease of the aorta itself, in addition to sudden paralysis. Putting this aside, there are the other two causes, haemorrhage and softening; the latter as resulting from thrombosis, and much more common than embolism.

Haemorrhage and Thrombosis.

With regard to thrombosis—thrombus, once formed, does not break up and disappear in some mysterious way; it is a difficult thing to get rid of, and we cannot appeal to recurring formation and disappearance of thrombi to explain our clinical phenomena. That is not pathology. With regard to haemorrhage, there seems to me to have been a marked tendency in later years to regard all cases of sudden hemiplegia as caused by cerebral haemorrhage. However this teaching may have arisen, I do not think it is correct. Tooth agrees with Gowers in thinking that thrombosis is the commonest cause of hemiplegia, and that is my experience. The outstanding symptom which differentiates the two conditions is loss of consciousness. Trousseau, following Récamier, pointed this out long ago. He said that "complete loss of motor power, without accompanying coma, belongs more especially to softening"; and he repeated it thus: "Whenever hemiplegia complete and absolute occurs suddenly, without loss of consciousness, softening of the brain may be diagnosed." Tooth accepts Trousseau's position as the "broad rule" to which there are many exceptions. Liddell says that two-thirds or so of all cases of hemiplegia due to haemorrhage show loss of consciousness. If these estimates are even approximately correct, about 1 in 5 cases of hemiplegia without loss of consciousness is due to haemorrhage. This symptom is therefore of predominant importance in the differential diagnosis of these two conditions.

Temporary and Intermittent Closing of Cerebral Arteries.

In this condition the closing of the blood channels is initiated by the channels themselves, and is effected by means of their muscular coat. It is a local closing, and may be partial or total—that is to say, it may only lessen the amount of blood passing, or it may completely arrest the flow of blood to the part. As a result there is either impairment or complete suspension of function, until the vessel opens and permits the blood to resume its course.

That such local closing of arterial channels is possible is seen in the local syncope of "dead fingers," in the "local syncope" of Raynaud's disease, in some cases of migraine, in the vessels of the retina in quinine blindness, and in temporary partial blindness seen to be due to closing of a branch of the retinal artery. A corresponding explanation is required for the phenomena which were exhibited in Mr. M.'s case. His case is only one of many I could give you. They are known to all physicians and practitioners of experience, and, were it necessary, I could gather striking examples of such recurring phenomena from

medical literature. The complete recovery which occurred in Mr. M.'s case could not have occurred had there been either haemorrhage or softening in the motor regions affected, or in the part of the optic radiation which determined the hemianopia.

A Working Hypothesis.

The explanation, moreover, provides a working hypothesis of great practical value, and this is the reason of my bringing the subject before you to-day. Take the phenomena in Mr. M.'s case. Extending over three months there were symptoms commonly regarded as premonitory, or as the threatenings of cerebral haemorrhage. But what is meant by *threatening* of cerebral haemorrhage? It is either haemorrhage or not; there is no half-way stage in haemorrhage, although the quantity varies greatly. But these threatenings also precede thrombosis and softening; they also precede the paralysis due merely to temporary arterial closing, as in Mr. M. The "paralytic stroke," due to any of three different pathological processes, has the same premonitory threatenings, and it is of no small practical importance that there should be a clear picture of the clinical pathology of this stage. These threatenings can only, I take it, be due to irregular vessel action, and so to irregular blood flow through the part. There must be vessel constriction, local in site, varying in degree and in extent, coming and going, intermittent.

Effects of Intermittent Closing.

The effects of intermittent closing may be placed in four groups:

1. It leads to impairment or suspension of the function of the part affected, as manifested by sensory disturbances and motor faltering or paralysis.
2. It favours thrombosis in certain states of the vessel wall, or of the blood itself, or of both combined.
3. If the heart be weak the blood flow is more easily arrested, thrombosis is favoured, and the risk of softening is greater.
4. If the heart be strong and the vessels not sound, haemorrhage is liable to occur. The haemorrhage, however, does not take place in the closed portion of vessel; it must take place on the proximal side, where the pressure is raised because of the distal closing.

The significance of the premonitory warnings and threatenings is thus seen, and the aim of practical therapeutics is made clearer.

Etiology and Treatment.

We have thus a picture of intermittent closing of arteries occurring in different parts of the brain, occurring in persons of very different types, and occurring, as in our case, at the early age of 50 years. If you ask about the etiology of this irregular vessel action we are at once brought face to face with fundamental problems. There are questions of constitution such as are embraced in the words "gouty" and "rheumatic"; there are questions in metabolism, such as the accumulation of the waste products of cell activity, the fatigue toxins, and the inefficient removal of such. There are questions of food and drink; there is the condition of the bowels, and the absorption of toxins from the intestinal tract. There are questions of skin and kidney action. There are questions of mental work and of mental repose; there is emotion and passion. In no department of our work is it so necessary to form a sound all-round estimate of the patient—habits, digestion, bowel action, kidney efficiency, the cardio-vascular system, have all to be reviewed and estimated aright, if we are to be guided aright. What is to be aimed at is the lowering or removal of the abnormal vessel irritability. In the robust plethoric subject the threatenings of which we have spoken have long been treated by active purgation, diminished food supply, physical and perhaps mental rest. All these measures are good, but the plethoric type does not supply the greater part of the cases we are now considering. In many cases active purgation, and all extreme measures, are to be avoided as positively hurtful. Rest, physical and mental, gentle bowel action, spare diet with no red flesh, are the general lines of treatment. The irritable tonicity of the vessel wall is in many cases wonderfully controlled by spiritus aetheris nitrosi. When symptoms appear to be more urgent I have much confidence in erythrol tetranitrate in $\frac{1}{4}$ to $\frac{1}{2}$ grain doses, repeated every three, four, or six hours, as may be required. The action is temporary, but it allows time for the bowels to act fully and for the elimination of the excess of waste products in the tissues. Thereafter restricted diet and daily bowel action may prevent the recurrence of symptoms. In other cases the vessel irritability is markedly allayed by the administration of iodide of potassium. I would very strongly warn you against violent purgation with calomel and similar drugs in persons with a feeble circulation, for the lowering of such a circulation is the surest way to ensure softening, and even subsequent haemorrhage. The feeble circulation has to be recognized behind thickened and incompressible vessels; see to it that you are not deluded into thinking that there is a strong heart because there is a high haemomanometer reading. A tonic as nux vomica may be a valuable addition to spirit of nitrous ether or to iodide of potassium in cases of this kind.

By a true estimate of the patient as a whole, by the wise use of the simple methods indicated, the irritability of the arterial wall disappears and can be prevented returning to any alarming extent. In this way we can by foresight prevent such truly pathetic cases as must be known to most of you.

The Wightman Lecture

ON

CONGENITAL HEART AFFECTIONS,

ESPECIALLY IN RELATION TO THE DIAGNOSIS OF THE VARIOUS MALFORMATIONS.

Delivered before the Royal Society of Medicine, Section of Diseases of Children.

By GEORGE CARPENTER, M.D.,

Physician to the Queen's Hospital for Children, London.

Gentlemen,—In acknowledging the honour that you have conferred upon me by inviting me to deliver the Wightman Lecture, I must confess that the acceptance of this distinction proved far easier than the selection of a suitable subject for the occasion. Passing now to the subject of congenital affections of the heart, I will first draw your attention to the known causes which bring about the various departures from the normal, which are classed under the heading "Congenital Heart Affections."

The coincidence of congenital malformations of the heart with malformations in other regions of the body is a matter of everyday experience. Heart malformations are not always accompanied by other congenital bodily defects, but they are sometimes found in association with such diverse structural faults as hare-lip, cleft palate, ill-developed teeth, supernumerary auricles, and supernumerary nipples, polydactylism, syndactylism, webbed fingers, steeple-skull, defects in the abdominal wall, herniae, ill-developed and absent rib cartilages, undescended testis, atresia of the anus and rectum, post-anal dimple, congenital opacity of the cornea, coloboma iris, congenital defects of the orbits, congenital ptosis, not to mention many other congenital irregularities of development which are obvious to the naked eye—cretinism, for instance—which sometimes bear them company.

Since heart malformations have been shown to be a family complaint in some instances, it must be admitted that inherited as well as acquired defects in the sperm and germ cells of the parents are of some importance in the production of malformations of the heart, as in other regions, for erratic tendencies to produce deformities, when once acquired, are handed down from parents to children.

Inquiry has been directed to the state of the mother's health, both bodily and mental, during the pregnancy to serve as an explanation for the production of congenital cardiac defects. When it is realized that the heart is perfectly formed, though in miniature, in seven weeks' time from the date of conception, it is obvious that there must be some error in the various examples that have been recorded of congenital heart disease following upon frights and so on during the last two or three months

of pregnancy; these psychical disturbances cannot possibly have had any effect upon the fetal heart.

Several examples of fetal endocarditis have been shown to the Society for the Study of Disease in Children, or have been spoken of at its meetings. These include 6 cases, while a few others have been recorded by Planchu, Gardère, and André Moussous. Fetal heart murmurs have been recorded by various writers.

In the production, therefore, of congenital affections of the heart two distinct processes can be seen in action—namely, developmental disturbance and inflammation. The one can operate without the other, and both are frequently combined.

It is only in a very small proportion of the cases of congenital defect that endocarditis, when it is limited to the valves, can be viewed as the cause of the disease. The bulk of the cases of congenital malformation of the heart appear to be due to developmental errors when seen by the light of modern research on cardiac development.

Morbus coeruleus and congenital malformations of the heart have been looked upon as synonymous, but without reason, for children with severely congenital morbus cordis are frequently not blue, even when excited or crying. Many verified cases of congenital morbus cordis have been recorded where cyanosis was not a symptom during life.

Some children with congenital morbus cordis are fresh-coloured. Others are strikingly pale. In some the lips are dark crimson, perhaps inclined to blueness rather than redness, or to turn lilac on crying. Or the complexion may be quite good and only the fingers dusky and cold-looking. The majority, however, are cyanosed more or less, and all gradations of cyanosis may be noticed, from that of a dark rubicund face with similar coloured ears and reddened finger and toe tips, or a state of rather dusky-blue lips and cheeks and tongue, and a similar condition of the extremities, to one where the face is plum-coloured, the conjunctivae suffused, the buccal mucous membrane and tongue the colour of slate, and the body generally dusky. In the majority of those who are blue the cyanosis dates from birth, but in others the children show no signs of blueness until after an attack of one of the exanthems, or following bronchitis or bronchopneumonia, with or without whooping-cough.

By far the most common malformations of the heart in association with cyanosis are those cases where the pulmonary artery or the conus are either absent, rudimentary, or constricted. Next in frequency in the list of malformations, though only to about one-seventh of their number, is transposition of the pulmonary artery and aorta. Apart from these maldevelopments, which form the bulk of congenital cardiac anomalies, the malformations which give rise to cyanosis are numerous and various.

Various views have been and are still held as to the causation of the cyanosis. In many cases the explanation is invited, not that the lungs cannot oxygenate properly, but that they are prevented from dealing with a sufficient proportion of the total quantity of venous blood throughout the body by reason of various defects in the pulmonary region, perhaps combined with weakness of the heart muscle.

Cyanosis, therefore, appears to depend in some cases not upon defective aëration from defects in the lungs, but to be due to the conformation of the heart, which by reason of faulty construction and physical weakness is placed at a mechanical disadvantage, and is not adapted to deliver a sufficient quantity of venous blood to the lungs to be aërated.

But this will not explain all cases, for in some the lungs are not healthy and display considerable microscopical alterations. So wide and so tortuous were the thickened lung capillaries in the case of atresia of the pulmonary artery I examined that those in the alveoli admitted six or more red corpuscles abreast. Changes such as these, permeating as they do the whole of the lung structure, are not conducive to proper aëration. It would appear, then, that diffuse and not localized structural alterations of the lung tissues are favourable to the production of cyanosis.

Here, then, are two factors in operation: the difficulty of getting the blood to the lungs to be aërated, and the difficulty of aërating the blood when it arrives there should it so happen that the lungs are not in a position to undertake the operation by reason of their structural defects.

Clubbing of the fingers and toes in congenital heart disease, the so-called Hippocratic fingers, depends almost entirely on congestive swelling and thickening of the soft parts of the terminal phalanges. The connective tissue is increased, and the capillaries are enlarged and increased in number.

The finger-tips are broadened and the nails cyanosed, a different appearance to that shown in chronic osteo-arthropathy, where the nail is domed like a watch-glass, curls over the finger-tip, and bears a striking resemblance to a parrot's beak, and is combined with osteo-periostitis of the terminal phalanx. The finger looks like a drumstick, and the nail is pink coloured.

There appears to be two varieties of clubbed fingers: in one there is osteo-periostitis of the terminal phalanges, but in the other this has not yet been demonstrated. Whether there are really two varieties of clubbed fingers or whether the conditions are different stages of the same process has not yet been settled.

Common as is this clubbing of the fingers and toes in congenital heart disease, nevertheless it is a feature of this disease which very often is wanting. It is in pulmonary atresia and stenosis that clubbing most commonly arises, and it is in these conditions that congestion is most frequently observed.

Ophthalmoscopic examination in cases of marked congestion reveals tortuous retinal blood vessels of which the veins are very large. The blood in the arteries looks decidedly venous, though they are not quite so dark-coloured as the veins. The red reflex, which is of cyanosed appearance, often appears to start from the physiological pit, and the number of vessels on the face of the disc appears to be greatly increased. In children where the cyanosis amounts to but little more than a ruddy bucolic appearance a want of the usual colour contrast between the arteries and veins is quite noticeable. The retinal blood vessels early display evidences of congestion by enlargement and tortuosity of both arteries and veins. If there be considerable cyanosis retinae, as sometimes is the case, without the associated appearance of curly retinal vessels, such an ophthalmoscopic finding, although not proof that there is no narrowing of the pulmonary region, nevertheless suggests that the pulmonary tract is either not involved, or that right-sided muscular compensation is sufficient to overcome the obstruction.

Blood changes such as polycythaemia, macrocythaemia, and increased viscosity along with a by no means invariable increase in the haemoglobin are not uncommon. In one blue child under my care, aged 2½ years, with clubbed fingers and toes, and who had been blue since birth, there was a blood count of 7,880,000 per c.mm., and the haemoglobin was 122 per cent. That is the largest number of red cells that I have met with in congenital heart disease.

Many of the children under my care with polycythaemia have shown a deficiency in the haemoglobin rather than an increase. In a blue infant, aged 1 year, with clubbed fingers and toes and lips, and finger-tips and toe-tips of purple hue, the blood count amounted to 5,400,000 per c.mm. red, with a haemoglobin percentage of 55 only.

Congenital heart murmurs are of various characters. They may be heard as harsh, roaring, churning, growling, sawing, twanging, rushing, or rasping noises. Musical bruits are not common in my experience. If murmurs of such character be heard in a child under 3 years of age, and if they be conducted over wide areas, the presumption is strong that the affection is of congenital origin. Soft, low, very faint bruits are sometimes present. Murmurs are usually systolic, occasionally presystolic or diastolic, and there is that peculiar rumbling murmur carried through the systole and diastole, which points to a patent ductus arteriosus or a communication between the pulmonary artery and the aorta. Sometimes the bruits become inaudible shortly before death, or during a paroxysm of cyanosis, and I have noticed a loud murmur to almost disappear under the influence of an anaesthetic. A murmur may be detected at one auscultation and cannot be heard at the next, and the causes for this temporary disappearance are not quite clear. Murmurs are also influenced by posture and by respiration. In regard to conduction, in some instances systolic bruits may be

traced along the arteries over the brachials as far as the bends of the elbows, and also be heard in the thighs along the course of the femorals. They can not only be followed up the arteries of the neck, but exceptionally can be heard by applying the ear to the vertex.

In only a small proportion of the cases are murmurs absent. In my series this occurred in 7 per cent.

Thrills are not infrequent; they are usually systolic, occasionally diastolic, or even presystolic. These purring tremors may be localized to the site at which they are produced or be of wide conduction. Further, the site of greatest intensity by no means necessarily corresponds to the seat of production. A systolic thrill of greatest intensity at the second left interspace and conducted towards the corresponding clavicle is, however, pathognomonic of patent ductus arteriosus. A systolic thrill may be felt at the episternal notch over the aorta, and may be conducted into the carotids and subclavians.

Defects in the interventricular septum are the most common of all cardiac malformations. They are associated mostly with stenosis and atresia of the pulmonary artery, transposition of the great vessels, and occlusion of the tricuspid orifice. The combination of pulmonary stenosis, deviation of the aorta to the right, and patent septum ventriculorum is one of the most usual forms of congenital morbus.

The commonest situation for perforate septum ventriculorum is directly beneath the aortic valves and just in front of the undefended space. In front of it lies the fleshy part of the septum and behind it the membranous. On the right side of the heart this opening will be found beneath the septal and anterior cusps of the tricuspid valve. It is rare for a perforation to be found in the anterior fleshy part. The septum may be absent, as in the cor triloculare, or the septum may be represented by a falciform ridge springing from the lower and anterior wall of the ventricle, or irregular defects may arise in it.

Changes in the heart muscle do not necessarily follow septal defects. In some cases, however, hypertrophy and dilatation of both ventricles are seen, and this is especially likely to occur on the right side.

Defects in the septum do not always produce murmurs, but when bruits are present the following characteristics have been noticed by me in the pure cases which have come under my observation. In a child, aged 2 years, there was a loud rough systolic bruit audible all over the chest, the point of maximum intensity being over the pulmonary area. It was not audible in the big vessels of the neck; the second pulmonary sound was accentuated. In an infant, aged 8 months, the systolic bruit was heard loudest at the junction of the xiphoid with the gladiolus on the left, and it was conducted a short way into the axilla. A faint systolic bruit was heard only occasionally at the left base. It was not transmitted to the neck vessels. The second pulmonary sound was accentuated. In an infant, aged 3 months, there was a loud systolic murmur at the left base, which was traceable as far as the left mid-axillary line. The second sounds were normal, and in this infant the heart was not enlarged. In the oldest child there was a marked systolic thrill all over the cardiac area, and in the child aged 8 months a systolic thrill was occasionally felt at the left base, but this might have been due to the patent ductus arteriosus, and in the infant aged 3 months it was absent.

It is not possible to lay down hard-and-fast rules as to the area of maximum intensity of the systolic bruit occasioned by patent septum ventriculorum. It is located on the left side of the sternum on the costal cartilages or interspaces, somewhere between the second left interspace and the junction of the seventh costal cartilage with the sternum, sometimes between the nipple and the left margin of the sternum, and rarely at the apex. The systolic thrill which occasionally accompanies it is not confined to any particular cardiac area; it is sometimes to be felt in the episternal notch, sometimes at the epigastrium. An important feature in the diagnosis of patent septum ventriculorum is the detection at the apex of a healthy first cardiac sound audible through the bruit and the tactile sensation accompanying it of the mitral valvular snap. The second pulmonary sound at the left base is accentuated if the pressure of the right ventricle be increased, and exceeding purity of this sound is important and suggestive.

Defects in the Interauricular Septum.—A patent foramen ovale is so frequently found at autopsy that it can hardly be classed with other congenital abnormalities, and Fisher states that slight patency of this foramen can be found in one-quarter of adult *post-mortem* examinations. A widely open foramen, however, must be looked upon as an anomaly. It occurs either alone uncommonly, or frequently in association with other interauricular septal defects. Defects in the lower part of the interauricular septum are rare, and are explained by failure of the septum primum to descend and unite with the endocardial cushion between the ventricles.

Open foramen ovale alone and along with other interauricular septal defects occurs in association with stenosis and atresia of the pulmonary artery, transposition of the great vessels, and occlusion of the tricuspid orifice. Defects in the interauricular septum happen nearly as frequently as defects in the interventricular septum. Very occasionally they are the *sole* lesions, and very slightly exceed in number as solitary lesions the similar conditions found at the interventricular partition.

Patency of the foramen ovale and defects in the interauricular septum are often diagnosed and seldom discovered, and for the reason that they do not often give rise to characteristic bruits; indeed, murmurs are but seldom produced by these abnormalities. Gross interauricular septal defects may be carried through life without causing any inconvenience or giving rise to any suspicion as to their presence.

Septal defects become of consequence if the auricles act unequally, and if there arises an overflow of blood into the right auricle, which produces stasis in the systemic veins. A reversal of the flow into the left auricle may bring about the same conditions by throwing extra pressure on the pulmonary artery and so on the right auricle. A point of clinical interest about defects in the interauricular septum, as in the interventricular septum, is that septic and other particles may be carried from the venous system direct to the arteries of the brain and body.

Stenosis of the pulmonary region is one of the most common of all the cardiac malformations, and in relation to atresia it occurs nearly three times as frequently. In the large majority of cases of stenosis the interventricular septum is patent. When this septum is closed the foramen ovale is often widely open. Both of these fetal passages may remain open. In rare instances both the fetal passages are closed.

In atresia the interventricular septum is more frequently found closed than in stenosis.

Of 13 cases, 6 of stenosis and 7 of atresia, I found the ductus arteriosus closed in all the cases of stenosis and patent in all the cases of atresia except 1, and in that case the lungs were supplied by a large branch from a left innominate artery, and not by the ductus arteriosus as is usual. If the ductus be closed in atresia the septum will be found defective, or the septum and foramen ovale will be open, and vary rarely the foramen ovale only. When there is a defective interventricular septum the aorta, which will then be found large, is frequently transposed to the right, and this irregularity occurs more often in atresia than in stenosis. The aorta may arise from both ventricles over the defective septum, or be thrust more to the right and take origin from the right ventricle only.

The stenosis may involve the whole pulmonary region, there being a hypoplasia of the pulmonary artery and its branches. In some cases the stenosis is valvular in character. It may consist of thickened nodular valve cusps associated with a normal pulmonary artery and normal interventricular septum.

In some cases stenosis has evidently originated later in intrauterine life after the closure of the septum ventriculorum. In the other and the more numerous variety the forms that are met with suggest a developmental origin and a secondary endocarditis infection implanted on a rudimentary pulmonary tract.

In developmental cases the pulmonary artery is usually thin-walled and vein-like. In the other variety the pulmonary artery may be thin-walled also, but it is often either dilated or normal. In stenosis hypertrophy and dilatation of the right auricle and ventricle are common, and if the aorta be deviated to the right these hypertrophies always arise, and this vessel will be found large and thick-walled. The combination of pulmonary stenosis,

deviation of the aorta to the right, and patent septum ventriculorum, is the most usual of all congenital abnormalites.

In *atresia* the obliteration occurs at the conus, or the valve, or the pulmonary artery may be entirely absent.

Regarding the detection of right-sided hypertrophy of the heart in pulmonary stenosis and atresia, a small amount of right-sided enlargement is rather apt to be overlooked, if reliance be placed solely on the superficial area of cardiac dullness. Deep percussion should always be resorted to in addition, and it is well, if possible, to verify the result by *x*-ray examination. The lung on the right side of the heart covers a moderate enlargement of the right auricle and ventricle, and so masks the signs.

The bruit of uncomplicated pulmonary stenosis is systolic in time, and is best heard over the second left interspace close to the sternum or on the third costal cartilage. It is usually conducted over the left front of the chest and crosses the sternum, being heard slightly to the right. It is carried up towards the left clavicle. It usually ends before the axillary fold. There appears to be some doubt as to whether the bruit can be heard in the back in uncomplicated cases. It certainly can; I have *post-mortem* evidence as to that. It can be heard all over the front of the chest and all over the back, the left side more than the right, and also in the left axilla. It is not heard in the carotids.

Should pulmonary stenosis be associated with a patent septum ventriculorum, as so frequently happens, a systolic bruit will probably be heard in the carotids. If that be heard the suggestion is that pulmonary stenosis is combined with this septal defect, as I believe I was the first to point out some years ago. It is not necessary for the aorta to arise immediately over the septal defect to conduct a bruit into the neck vessels.

The prospect of life varies in these cases according to the defect. In atresia with a closed septum the children die in infancy. If the septum be patent the child may live a few years in place of a few months. In stenosis with a closed septum middle age may be reached, but with a patent septum adult life is the limit.

The average diameter of the ductus arteriosus *post mortem* at birth is stated by Thérémin to be 4.8 mm., and, according to Klotz, this measurement is no indication of its functional capacity during life, for he states, on experimental evidence, that the size of this vessel when in action is equal to the capacity of the pulmonary artery itself.

Patency of the ductus arteriosus as an isolated lesion is rare, very few cases being recorded in the literature, but as an associate of other congenital abnormalities of the heart it is quite common.

The patent duct may be cylindrical or conical, with the base of the cone on the aortic side, or globular. The lumen of the vessel in the cases that have come to autopsy has varied from a bristle to that of a finger. Hypertrophy and dilatation of the right ventricle and dilatation of the pulmonary artery commonly take place in chronic cases.

Attacks of dyspnoea, epistaxis, tachycardia, and angina have been recorded by various observers in association with this condition.

The characteristic rumbling murmur accompanying patent ductus has been verified by *post-mortem* examination on adults, but not, as far as I am aware, on children. Gibson times the murmur as commencing soon after the systole and gradually shading off in the long pause. Combined systolic and diastolic bruits have been recorded by Drasche, and a diastolic bruit by Fagge. Systolic bruits have been described by Murray, White, Simmons, and Bittorf.

The systolic bruit is heard loudest in the second or third left interspace close to the sternum. It may be heard only to a limited extent, or it may be carried all over the chest, back and front, and into the arteries of the neck, as in my verified cases. A thrill is by no means constant. When it occurs it is best felt in the second left interspace, and if the thrill be carried up to the left clavicle in the direction of the pulmonary artery, that is pathognomonic. The pulmonary second sound may be unaltered, but if the blood pressure be raised in the pulmonary artery by hypertrophy of the right ventricle or by the contribution from the aorta, then an accentuated pulmonary second sound will be heard. If the *x*-ray picture suggests an enlargement of the pulmonary artery, that point is in favour of patent duct.

If the second pulmonic sound be loudly accentuated, there will probably also be observed visible diastolic pulsation or rebound in the second left interspace at the time of the closure of the pulmonary valves.

Bruits and physical signs cannot be expected to occur in patent ducts of small calibre. In order that a bruit shall be produced it is necessary that there shall be a sufficient space within the walls of the duct and pulmonary artery, in which the conflicting blood currents shall operate best to produce vibration and sound.

Systolic bruits in my experience are the usual accompaniments of patent ductus arteriosus in children, and the rumbling bruit occupying the systole and diastole in adults which is considered to be characteristic of that lesion is not common in them.

Tardy closure of the ductus arteriosus may well explain the disappearance of cardiac bruits in children who have been diagnosed as suffering from a congenital heart affection. Reviewing the morbid anatomy of the congenitally deformed heart, closure of this fetal channel appears to be about the only thing possible in the way of a cure open to these cases.

Coarctation of the aorta is the name which has been given to stenosis or atresia of that vessel, either at or below the isthmus, that part which lies between the left subclavian artery and the ductus arteriosus. Soon after birth that narrow section of the aorta which is not much used during intrauterine life is apt to be smaller than neighbouring parts of this artery, but when the circulation is reconstructed this part soon acquires its proper proportional relationship. Bonnet describes two types. In one, the *infantile*, there is diffuse narrowing of the aorta at the isthmus. In the other, the *adult* form, there is an abrupt constriction as of a cord at or near the insertion of the ductus arteriosus. The infantile type is developmental and may consist of a moderate stenosis only, or, owing to the complete failure of development in regard to that part of the fourth branchial arch which lies between the ductus arteriosus and the subclavian artery, the part corresponding of the aorta—the isthmus—is represented by a cord only or completely disappears. The *adult* form he considers is not of developmental origin, because it does not occur in the fetus and is not met with until the closure of the ductus arteriosus, and is brought about by the act of closure of the duct itself, elements of which are incorporated in the aorta, and which by their contraction constrict that vessel as with a ligature. In the infantile type of case patency of the ductus arteriosus is common, and in the adult type that channel is usually closed. In the adult type extensive collateral circulation is common according to Bonnet. In the infantile type associated cardiac developmental anomalies are common and often severe; in the *adult* type the anomalies are usually unimportant and rarely severe. In the adult type the percentage of cases without associated cardiac developmental anomalies is far greater than in the *infantile*.

From the literature it appears that patients with coarctation of the aorta may live long and the condition not be suspected. In some death takes place suddenly and without obvious reason, sometimes from rupture of the aorta. Or death may occur from heart failure preceded by the signs and symptoms of mitral disease.

Congenital aortic stenosis and atresia are much rarer than the corresponding defects at the pulmonary artery. Conus stenosis in this situation takes the form of a thickened ring of the endocardium, just below the aortic valves, which involves the base of the anterior mitral cusp, and is ascribed by Keith to arrest of development. The danger of this rare anomaly lies in its tendency to become the seat of endocarditis. In aortic atresia, brought about by such conditions as obliteration at the root or by fusion of the cusps, the left ventricle atrophies and the circulation is conducted through the foramen ovale, patent septum ventriculorum, and patent ductus arteriosus. The life of such cases has been limited to a few weeks. In aortic valvular stenosis there are two forms—one in which the septum ventriculorum is perfect, the other in which it is deficient. In this latter variety other developmental anomalies are the rule.

Aortic disease of the acquired type is not as rare in children as is commonly supposed, and some of the cases are no doubt of congenital origin. Another point of clinical interest, a recognition of which will prevent falling into error, is that aortic disease in children is apt to be associated with a bruit which is heard loudest over the pulmonary area, and not over the aortic cartilage.

Hypoplasia of the aorta is characterized by diminution in size of the aorta and arteries throughout the body, the walls of which are thin and elastic.

A congenital origin has been claimed for this condition, because it is so commonly associated with anomalies in the generative and circulatory systems. A congenital tendency to the dwarfing of the arterial system has been ascribed to tuberculosis in the parents, and it may be due to other states of bad health.

Hypoplasia of the aorta is associated with a dwarfed heart in some instances, and in others with an enlarged heart confined to the left side or involving both ventricles. If the heart be small during childhood it hypertrophies at puberty. The period of danger in these cases appears to belong to adolescence, when heart failure is not unlikely to occur, and this is more likely to arise under physical strain.

Defects in the auriculo-ventricular valves are very uncommon. They are commonly combined with other cardiac abnormalities, uncomplicated lesions of the mitral and tricuspid valves being exceedingly rare. Of the two valves the tricuspid is more frequently attacked than the mitral, and of the lesions tricuspid atresia is the commonest.

Tricuspid stenosis in association with disease of the pulmonary valves is occasionally seen.

Mitral atresia is very rare. Cases have been recorded by Rokitansky, Thérémin, and by Lawrence and Nabarro, and in each instance the condition has been associated with somatic abnormalities.

A specimen of *congenital mitral stenosis* was exhibited at the society for the Study of Disease in Children by Fisher in 1901.

Of *mitral insufficiency* Cautley has afforded an example in a girl aged 22 months. The physical signs were those of mitral regurgitation, and another case in a boy, aged 10½ months, has been quoted by Maude Abbott.

Hypertrophy of the heart undoubtedly arises as an idiopathic disease of congenital origin. Simmons was the first to record a case of its existence at birth. He found the heart of a newly born child, who died during the labour, to be enlarged to twice its natural size, all other organs of the body being quite healthy. Prior to that Hauser had recorded a case in a baby, aged 11 months, in which the heart was enormously dilated, with hypertrophied right and left ventricles. Virchow suggested that the hypertrophy might be congenital.

Cardiac displacements such as *dextrocardia* and *mesocardia* are the only congenital malpositions that are of interest to the physician and therefore that need be reviewed. Dextrocardia, accompanied by transpositions of the viscera, is commonly viewed rather as a rare developmental freak than recognized, as should be the case, as a not very out-of-the-way clinical experience.

Dextrocardia without associated transposition of the viscera is rare, and not only is it rare, but it must be viewed with suspicion, because the diagnosis of congenital dextrocardia has been made on some few occasions, and this opinion has not been confirmed by autopsy.

Sometimes the position of the fetal heart in the centre of the thorax is maintained, giving rise to the condition known as *mesocardia*. The apex beat will then be felt in the epigastrium, and the position of the organ will readily be demonstrated by the *x* rays.

AT the eighty-first annual meeting of the West Riding Medical Charitable Society, of which Dr. Gibson, of Harrogate, is now President, it was reported that forty-eight grants, amounting in all to £1,680, had been made during the year, and that since the foundation of the charity the total sum disbursed in grants had been £46,295 10s. Of those on the society's list of grantees four had died during the year, and five new applications had been received. Mr. Herbert Rowe, who for twenty years was co-secretary with the late Mr. Claude Wheelhouse, was unanimously elected Honorary Treasurer, and Mr. Michael Teale appointed Honorary Secretary.

THE PERONEAL TYPE OF MUSCULAR ATROPHY

WITH AN ACCOUNT OF A FAMILY GROUP OF CASES.

BY

J. RUTHERFORD HALLIDAY, M.D.,

AND

ARTHUR J. WHITING, M.D., M.R.C.P.,

PHYSICIAN TO THE PRINCE OF WALES'S GENERAL HOSPITAL, N.; ASSISTANT PHYSICIAN TO THE MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.

THE following cases of hereditary muscular atrophy belong to a family in which it appeared in at least four generations; the cases are examples of the still unclassified peroneal type first closely studied by Dr. Howard Tooth in this country, and by MM. Charcot and Marie in France.

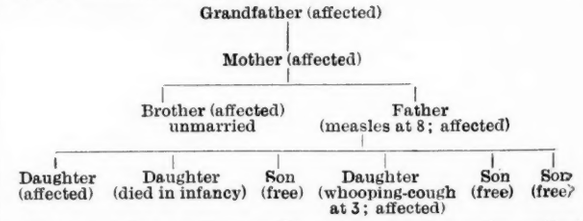
The patients are a man, aged 45, and his two daughters, aged respectively 17 and 21; the remaining members of the group include the grandfather, mother, and younger brother of the present head of the household, all deceased.

CASE I (*Father*).

G. H. S., aged 45, married for eighteen years, has six children, three girls and three boys. One girl died in infancy of whooping-cough. The other children, the youngest of whom is 2 years of age, are living, but the two daughters are the subjects of the same condition as their father; the others are apparently sound. The patient is a cardboard box cutter, and for fourteen years held the position of foreman in the works. He is a man of more than ordinary intelligence, has been steady all his life, and, it may be taken as certain, has not suffered from any venereal disease.

Family History.—His father is still living and is 70 years of age; he is somewhat alcoholic and has been so for many years. The mother died when 50 years of age of heart disease; she suffered from clubbed feet. Such particulars as could be gathered of her case are set forth under Case V. An only and younger brother—there were no sisters—died, when 32 years of age, of pneumonia; he was similarly affected in the lower extremities, and particulars, so far as they could be obtained, are recorded under Case IV.

The following is the patient's family tree, details of the affected members of which follow:



History of Present Illness.—Up to 8 years of age the patient was quite healthy; he then had measles. Soon after recovery weakness of the feet was noticed, and he gradually came to walk on the outer edge of the feet. At 15 years of age he attended an orthopaedic hospital, and was given special boots, which were worn for two years. At 17 he went to another hospital and underwent an operation for the deformity, after which he wore iron supports for three years. He was able to walk fairly well on the level ground, but experienced a little difficulty in going upstairs. From adolescence up to the age of 32 the condition seems to have remained stationary, and he was able to attend regularly at work. Thirteen years ago, when 32, he began to "feel himself going all wrong," he became conscious of increasing weakness in the legs, and then noticed they were getting thinner, especially the left. At this time he also noticed commencing weakness in the hands, which showed itself in clumsiness of movement on attempting to pick up small articles. Gradually the backs of the hands became thin and hollows appeared between the metacarpal bones. He found difficulty in feeling small articles in the dark, so that he was often unable to take matches out of a matchbox, to pick up a coin, or to fasten his collar. About eight years ago an ulcer formed on the outer side of the right sole; this several times healed under treatment, only to break down again on using his foot. At varying intervals during the last thirteen years he has had attacks of pain down the limbs and also round the waist, and these have been more frequent of late. He was able to work up to February, 1904, when, in consequence of the extensive ulceration of the right foot, he was compelled to lay up. On recovery he found himself much weaker and unable to walk far without feeling exhausted.

State on Examination.—In 1904 the following notes were made: The patient's general condition in regard to his respiratory, circulatory, and digestive systems is good. Bladder and rectum are normal in their functions. Sight and hearing are good. The trunk muscles are well developed.

Lower Extremities.—Both feet are clubbed, and there is also claw-toe deformity, the big toe of each foot being most affected. He is unable to abduct or adduct the feet, is only able to extend the feet to an extremely limited degree, and there is complete loss of power to extend the toes. Both legs show marked wasting, the left more so than the right. In both legs the external fibular muscles, namely, the peronei, are markedly atrophied, the tibialis anticus and extensor muscles have also suffered; in the left leg the calf muscles show a greater degree of atrophy than those of the right (Fig. 1). The natural contour of the legs is quite lost. Both knee-jerks are absent. On the inner aspects of both legs at about the lower third the skin is somewhat brownish and glossy. The legs always feel cold to the touch.

Fig. 1.—Case 1. Showing the atrophy of leg muscles, more extreme in the left than in the right, with consequent loss of the natural contour; the club-foot and claw-toe; and the Aran-Duchenne hand.

Upper Extremities.—Both hands show advanced atrophy of the thenar and hypothenar muscles, and also of the interossei and lumbricales. He is unable, therefore, to extend the fingers, the attempt to do so bringing them at once into the claw-like position. In the right hand the thumb can be made to oppose all the fingers, but in the left the thumb is unable to oppose the little finger. The forearms are thin, but there is no inequality between them. Patient is able to perform all the wrist movements without any difficulty. Fibrillary tremors have been observed in both hands. There is scoliosis of the spine with the convexity to the right.

Sensation.—Over the soles of both feet there is complete loss of sensation to touch and heat, but not apparently to cold, and there is delayed sensation to the pin-prick. Over the dorsal aspect of the feet, the front and back of the legs, there is a general impairment of sensation to touch and heat; a pin-prick is more readily recognized, and, on the whole, the right leg is better than the left, the thighs better than the legs, and the right thigh than the left thigh. Sensibility to touch, temperature, and pain is quite normal over front and back of trunk, face, head, and neck. Over the palmar and dorsal aspects of the hands there is impairment of sensation to both touch and temperature; a pin-prick is recognized as such, but there is delay. Over the arms and forearms no appreciable loss of sensation can be determined.

Electrical Reactions.—With the faradic current the interossei muscles of the left hand give no reaction, and the thenar and hypothenar muscles act feebly. In the right hand there is a faint reaction in the interossei and in the thenar and hypothenar muscles. In the forearm muscles there is diminished reaction. The upper arm muscles act feebly, but only with a strong current. In the lower extremities no reaction is obtainable in the muscles of either the thighs or legs. In the intrinsic muscles of both hands the galvanic reaction gives KCC > ACC, and the reaction is not sluggish. In the leg muscles there is no reaction to galvanism, even with a strong current. An especially noteworthy feature is that, while there are electrical changes in the atrophied muscles, those muscles not obviously atrophied, such as the thigh muscles, cannot be made to act with strong currents, such as could not be borne by a normal healthy person. There is inco-ordination of muscular movements both in the upper and lower extremities; Romberg's sign is present. The pupils are small and unequal, react very sluggishly to light but briskly to accommodation.

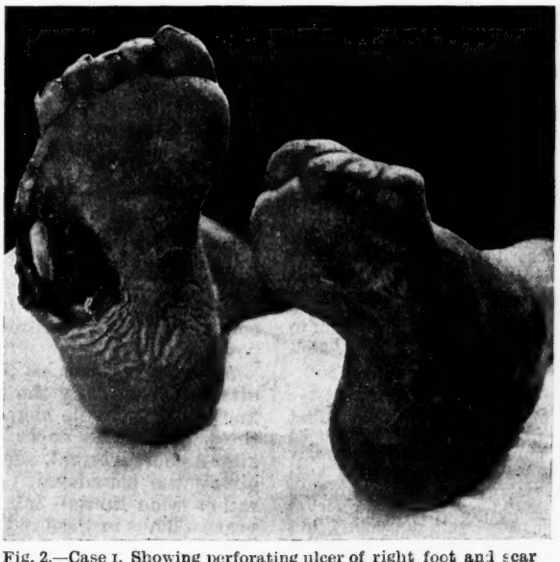


Fig. 2.—Case 1. Showing perforating ulcer of right foot and scar of another on left foot.

State on Examination, November 11th, 1907.—He was then admitted into the Prince of Wales's General Hospital, N., under the care of one of us, largely to attempt to obtain sound healing of the right foot. It was a long ulcer on the outer and under surface of the right sole. There was the scar of another in a similar position on the left foot, which had just healed. (See Fig. 2.) On that date he had a fairly healthy appearance, but was somewhat pallid, was inclined to be stout, and had a rather expressionless face, although his intelligence was unquestionable. The body organs were again found to be healthy. The pupils were unequal, the left being larger than the right, which was "pinpoint," and both showed the Argyll Robertson phenomenon. The optic discs were of a good pink colour, and vision was quite good. The atrophy and weakness were merely somewhat more marked than on the previous examination. Fig. 3 shows the change in bulk. There was tactile anaesthesia downwards from just above the knee on the right side and from the junction of the middle and lower third of the leg on the left side. Sensibility to pain was preserved, but there was marked delay on both sides as high as the middle of the thigh. There was tactile anaesthesia of the hands as high as just above the wrists. There was no ulnar anaesthesia in the forearms. There was apparently no thickening of any accessible nerve trunk. A special electrical examination was made by both of us with Dr. Gerald Burke, the house-physician, on January 27th, 1908. With the hand of one of us on the patient's cheek over the exit of the facial nerve and the coils separated 1½ in., a vigorous contraction was obtained in the thenar muscles of the examiner, and a very distinct sensation, but there was no contraction in the patient's facial muscles and no sensation. A good reaction in the examiner's facial muscles was obtained with one electrode in the left hand and the other in the right hand, the back of which was applied to the side of his own face, and that with the coils separated less than 2 in. With the coils pushed nearly home, the electrodes being one in the patient's hand and the other in the palm of the examiner's hand, the back of which was placed on the patient's face, there was an extremely vigorous contraction on the part of the operator, but on the part of the patient hardly any sensation and no muscular contraction. To galvanism a good contraction was obtained in the examiner's first interosseous muscle of the hand, using the negative pole and the indifferent electrode in the other hand with 2.75 m.a. of current. With the indifferent electrode on the patient's back and the other electrode applied to the same muscle of the operator's hand, which was resting on the

Fig. 3.—Case 1. Showing double club-foot, double claw-hand, wasting of muscles, and pigmentation of the skin.

patient's biceps, a contraction was obtained in the examiner's muscle with 2.5 m.a. With the active electrode then applied directly over the patient's biceps no reaction was obtained with nearly 20 m.a., neither with ascending nor descending currents. A doubtful reaction was obtained in the first interosseous and a clear one in the third of the patient's hand, with about 20 m.a. and ACC = KCC. An examination made by Dr. Howard Pirie, electrician to the hospital, on February 3rd, 1908, gave the following results: A maximum faradic current causes slow and slight contraction in the thenar muscles, the first, second, and third interossei, and the hypothenar muscles of the left hand. No muscle of the left forearm would react. A tender spot was elicited with this current over the deltoid motor point, but no contraction. No reaction was obtained from any face muscles except a slight one from the right *risorius*. No contraction was obtained from any muscle of either thigh or leg. The right hand gave the same negative result, but a contraction was obtained from the right flexor carpi ulnaris and the flexor minimi digiti with some flexion of the other two inner fingers. Several tender spots were localized in the left forearm.

CASE II (*Daughter*).

A. L. S., daughter of the patient just described, is 16 years of age. She had whooping-cough when 3 years old. From this time up to the age of 10 she enjoyed perfect health, was able to run about and play with other children. Soon after she was 10 it was noticed she was becoming less active, and there was a tendency to walk on the sides of her feet. About a year later weakness was noticed in the hands.

State on Examination, February, 1904.—The patient was pale and somewhat thin, but intelligent and cheerful in disposition. The muscles of the legs below the knees were distinctly wasted, but measurement did not reveal any inequality between the two limbs. When the patient was lying down or sitting with the legs dangling the loss of power in the peroneal and extensor muscles was more manifest, both feet showing foot-drop. Slight talipes varus was present with some pes cavus (Fig. 4). She was unable to dorsiflex the right foot, and the left foot only to a slight extent, and she was not able to stand on tiptoe. The knee-jerks were absent, even with reinforcement. Cutaneous sensibility over the soles showed some impairment, but elsewhere it was quite normal. In the upper limbs there was no obvious atrophy. There was, however, commencing weakness in the hands, which had been evidenced by the fact that whereas a few months before the patient was able to open the spring of a neck fur with her hand she was now unable to do so, but pressed the spring open with her teeth. There was commencing scoliosis with convexity to the right. There was no inco-ordination of movements; the pupils were normal; there was no nystagmus.

Fig. 4.—Case II. Showing the tendency to drop-foot and pes cavus (February, 1904).

Electrical Reactions.—The intrinsic muscles of the hands reacted to faradism, although somewhat feebly. In the right leg the peroneal and extensor muscles reacted fairly, the tibialis anticus faintly. In the left leg the results were substantially the same.

To Galvanism.—The right and left thenar muscles responded only fairly, but KCC 7 ACC. Owing to the patient's extreme nervousness the electrical examination was difficult, but the general result was that there was diminished irritability to faradism.

State on Examination, November, 1908.—Since the foregoing notes were taken the girl has increased greatly in weight and height. Her legs now drag markedly in walking, the great toes are constantly turned up (claw-toe), she wears away the soles of her boots on the inner side before the rest, and her hands have become flapper-like, so that when using them to remove her clothing she is obliged to use the whole hand, not the fingers alone.

CASE III (*Daughter*).

The third case is that of the elder daughter of the first patient. She is 21 years of age, and a big, well developed woman. It does not appear that she has suffered from any acute illness in the past. She is healthy looking and well nourished. She is apparently (November, 1908) just beginning to follow the course of her younger sister. She is somewhat clumsy in her gait, the calf muscles are well developed, but there is weakness and some wasting of the muscles on the outer side of the legs below the knees, and the knee-jerks could not be obtained even with any method of reinforcement. An electrical examination was not made because of the apparently insuperable objection of the patient to that method. The hands are not obviously affected.

CASE IV (*Brother*).

W. J. S., younger brother of the first patient, was quite healthy up to the age of 16, then clubbing of the feet began. At the age of 17 he underwent an operation for the deformity. He then wore iron supports for several years. He had considerable difficulty in getting about. Between the ages of 20 and 25 the hands became affected and claw-shaped. There was lateral curvature of the spine. Ulcers were present on both feet, and owing to extreme ulceration of the right foot it was amputated when he was 23. He died from pneumonia at the age of 32. He was unmarried. It is not known if he had any acute illness in childhood.

CASE V (*Mother*).

Mrs. S., the mother of patients I and IV, began to develop clubbed feet when about 17 years of age, and had an operation for the deformity when 18. She was married at 35, and in her family had only the two sons already referred to. That her hands were not affected is apparent from the fact that she was able to play the piano up to a short time before her death. She died at 50, from heart disease. No particulars can be obtained as to her having suffered from any illnesses in early life.

CASE VI (*Grandfather*).

Mr. A., the father of Mrs. S. and grandfather of the first patient, was known to have some deformity affecting both feet. No further information can be obtained, but it may be assumed that it was the same affection seen in the later generations.

As long ago as 1875 Leyden and others noted that there were cases of what might truly be called progressive muscular atrophy in which the wasting began, not in the intrinsic muscles of the hands, as in the Aran-Duchenne type, but in the lower limbs, and these cases, he remarked, were often hereditary. But it was not until 1886 that Howard Tooth[1] in this country, and Charcot and Marie[2] in France, identified these cases of hereditary lower-limb atrophy as a separate disease, subsequently known as the peroneal type of muscular atrophy, or by some as progressive neural muscular atrophy, after Hoffmann.[18]

The foregoing group of cases corresponds closely with this now well-recognized type, and in the following account the clinical picture represented in them is filled in with some detail.

The disease usually manifests itself between the early years of childhood and puberty, and the first sign is generally some weakness in the legs and feet, shown by a tendency for the "legs to drag" or the "feet to turn in." In most cases the affection has appeared to begin in the peroneal muscles, and it is certainly this which gives rise to the early development of the characteristic foot deformity, the most usual form being talipes varus with some degree of pes cavus, a deformity which is clearly due to gradual loss of power in the peronei, and not to secondary contractures. In some cases, however, atrophy has been noticed in the intrinsic muscles of the feet from the beginning, and it is a question whether the point of onset is not more often than has been thought in the small muscles of the feet, a position in which the effects of the atrophy would not speedily become obvious. There is usually not only club-foot, but claw-toe as well.

The next muscles to be affected are usually the tibialis anticus, the extensor longus hallucis, and the extensor longus digitorum; and following these the flexor group, comprising the gastrocnemius, soleus, and tibialis posticus.

After the leg muscles those of the lower thigh are next attacked, especially the vastus internus, giving what is known as the bottle shape (with the neck downwards) to the thighs. The upper extremities are usually involved after a short interval, affecting first the intrinsic muscles, giving the claw-hand. This interval may vary within rather wide limits—Sainton gives six weeks and fifteen years. Thus in Case II the hands showed weakness only eighteen months after the first symptoms; in Case IV the hands became affected between four and five years after, while in Case I they were apparently free for twenty-four years, which is, as far as we are aware, the longest interval on record; and in the mother of this patient (Case V) they escaped altogether, as she was able to play the piano up to nearly 50 years of age, a short time before her death. As Sir William Gowers, in his well-known textbook, has remarked, claw-hand in early life is

so rare from any other cause that it may be taken, together with club-feet, as almost pathognomonic of the condition.

The wasting may then proceed to the muscles of the forearm and upper arm; the supinator longus is spared, as in lead paralysis, and the muscles of the shoulder, neck, and back generally escape. They, however, may become affected and the wasting even general. The wasting is, moreover, as a rule more or less symmetrical, but it may begin earlier on one side, and that consequently show a greater degree of atrophy.

The electrical reactions may at this date be termed characteristic. In the Aran-Duchenne type there is a gradual diminution of irritability to the faradic current, and a degree of qualitative change in the galvanic reaction appears, the changes bearing a proportion to the degree of muscular atrophy. The fully developed "reaction of degeneration" may, however, be obtained, but when it does occur it is usually a late feature. In the "peroneal type" electrical changes take place early, before atrophy has become extreme, and the full reaction of degeneration appears early. Perhaps the most constant feature is either an early and greatly diminished irritability or complete loss of faradic excitability. In two of our cases, in which electrical examination was feasible, the diminished irritability to faradism was well marked, not only in atrophied muscles, but also in those not obviously atrophied, and there was, in the absence of analgesia, a marked diminution in what may be called faradic sensibility. Of course, it must be borne in mind that atrophy may be present in a muscle before it is apparent—in fact, the gross atrophy which is obvious can only be the outward expression of an antecedent atrophy which has been steadily progressing until sufficiently advanced to be observed.

In Case I it may be remarked where there was a diminution in electrical excitability of the apparently unwasted muscles, equivalent on a rough estimate to one-seventh of the normal—that is, a loss of six-sevenths—and including the facial muscles in this diminution, there was a distinct defect of tonicity in the muscles of the face, as manifested by an expressionless physiognomy, which might fairly be taken, we think, as evidence of a defect in the nutrition of the face muscles. In one of the cases recorded by Dubreuilh the face muscles were apparently incapable of expressing emotion.

Oppenheim,[3] it may be mentioned, refers to a case in which this loss to faradic excitability was found in almost every muscle of the body accessible to electrical stimulation, although there was obvious wasting in the lower limbs alone. The galvanometer observations in Case I show that the diminution in the reaction to galvanism could not be due to excessive skin resistance, and, by using the patient's body as part of the faradic circuit in stimulating the observer's muscles, it was demonstrated that there was no excessive skin or tissue resistance to the faradic current. Both Hoffmann and Dubreuilh[4] record cases in which the facial muscles could not be thrown into activity by either current when applied either through the nerve trunk or directly to the muscles.

Lateral curvature of the spine may appear early (as in Friedreich's ataxy) possibly in relation with the early development of club-foot. The affected limbs are often cold and livid, or pigmented. Cutaneous sensibility in some cases remains unimpaired, but, as a rule, there are patches of anaesthesia, especially in the region of the atrophied muscles and over the soles of the feet. Pains and cramps are often complained of. Fibrillary tremors are frequently present, especially in the hands.

Among the 52 cases collected by Sainton,[5] the knee-jerks were absent or much diminished in 50 per cent, increased in 10 per cent., and normal in 40 per cent. As a rule, there is no sphincter trouble.

Some cases approximate very closely to "locomotor ataxy," so much so that one writer regards the "peroneal type" as a hybrid between "progressive muscular atrophy" and "locomotor ataxy." In Case I not only were the knee-jerks absent, but there were, in addition, patchy anaesthesia, the Argyll Robertson pupil, myosis in one eye, some inco-ordination of both upper and lower extremities, perforating ulcers on both soles, and at intervals there were general shooting pains in the limbs, only comparable with the lightning pains of locomotor ataxy.

As just suggested, this case of peroneal atrophy is by no means unique in its manifestation of what may be called tabetic signs; in one point alone we had thought Cases I and IV were unique—namely, in the exhibition of perforating ulcer; but Oppenheim[3] refers to a case in which also there was perforating ulcer. Among other cases on record showing tabetic symptoms may be mentioned those by Siemerling[6] (Argyll Robertson pupils), myosis (Dubreuilh[4]), lancinating pains and optic atrophy (Vizoli[7]), disturbance of micturition (Sainton,[5] Ormerod,[8] Egger[9]). It may again be repeated that in Case I, after careful examination and consideration, the occurrence of syphilis was confidently excluded.

It is of interest, in this relation, to remember that though localized muscular atrophy in tabes is unusual it is not extremely rare. One of us,[10] in publishing in *Brain* the notes of two cases with atrophy of the deltoid, biceps and supinator longus, collected from the case records of the National Hospital, Queen Square, among 200 consecutive cases of tabes, 29 with paralysis of muscles of the limbs or of muscles other than the external muscles of the eyes and of the laryngeal muscles, and 16 cases of obvious localized atrophy of the skeletal muscles. Among many similar cases in the literature not a few are stated to have had clubbed foot (Condoleon and others)—cases presenting affinities with Friedreich's ataxia, as indeed do some of the recorded cases of peroneal atrophy.

The etiological factors must now be considered.

Sex.—Males are more liable than females, suffering, according to Sainton, five times as frequently. In the family group on which this paper is based the transmission is very clearly from the great-grandfather to his daughter, from the grandmother to her sons, and from the father to his daughter. So here, at any rate, an ordinary transmission of nervous and mental diseases of the parent of one sex to the children of the other seems to hold good.

Age.—The disease would appear to occur most commonly between the ages of 2 and 15 years; it seldom begins after 20 and does not appear to have been observed before 2 years of age. Of 52 cases, for example, collected by Sainton[5] the onset in 40 was before the age of 22, the extremes were 2 and 40.

Predisposing Causes.—Hereditary influences are very powerful. The malady is, indeed, essentially a familial and hereditary one. Isolated cases, of course, must occur, but they are either extremely rare or often unrecognized. According to Sainton there are only 10 isolated cases on record, but this is probably a too low estimate. The number of persons attacked in one family may be large—for example, Herringham[11] records 26 in one group.

Exciting Causes.—In a large number of the cases on record there has been a previous history of some acute specific infection, especially measles. In Ormerod's cases of a father, son and daughter, all had had measles in early life. In our cases there is a definite history of measles in one, and of whooping-cough in another. On the other hand, a son who suffered from both measles and scarlet fever has remained free, and one daughter who has escaped as far as can be ascertained all acute infectious diseases has been attacked. Cases are on record developing after small-pox and typhoid, and an influence of intoxication by lead, syphilis, and alcohol, is said to have been apparent in some cases.

Pathology.

As long ago as 1855 Virchow[12] found anterior horn changes in what must be identified with the peroneal cases, and as a result they were classified with progressive muscular atrophy. The first systematic examination of their morbid anatomy was made as late as 1889, three years after the publication of the clinical accounts by Tooth, Charcot, and Marie. Finding an atrophic neuritis of the peripheral nerves, the condition became classed in the multiple neuritis group. In 1893 Bernhardt[13] found, in addition to the neuritic changes, sclerosis in the posterior columns of the cord. At the present time, especially since Sainton and Marinesco,[14] first examined the nervous system in these cases by modern methods, the pathological evidence supports the view that the anatomical basis of the disease is on the type of a system lesion, especially of the reflex-arc system, and might be formulated as comparable with those of a hereditary locomotor ataxia (Friedreich) with muscular atrophy due

to a superadded cornual lesion. The actual findings in the recorded necropsies agree in degeneration of the nerves, the muscles, and the posterior columns of the cord; these three may be said to be constant as far as present knowledge goes. Among other lesions not constantly present or recorded are those of the posterior horns (recorded by Gombault and Mallet,[15] and Marinesco), the anterior horns (by Friedreich, Gombault, Déjerine and Marinesco, and Sainton), sclerosis of the pyramidal tracts (by Sainton and Dubreuilh), and atrophy of the cells of Clarke's column by Sainton; while Déjerine,[16] Gombault, and Marinesco have described some hypertrophy of the interstitial substance of the nerves leading to manifest thickening.

Differential Diagnosis.

The differential diagnosis offers little, if any, difficulty. Oppenheim and Cassirer[17] have recorded a case which showed all or most of the distribution characters of a myopathy; but the reaction of degeneration (a degree of which is present often in the muscles not obviously wasted), the pains and anaesthesia if present and the distribution of the wasting are sufficient to differentiate the peroneal from the myopathic type. The similarity with progressive muscular atrophy is not close enough to occasion perplexity; the absence of the knee-jerks and the sensory phenomena are sufficient to obviate that. There is much greater difficulty in eliminating the possibility of multiple neuritis. Some of its characteristic symptoms developing after a toxic fever are suggestive, but the progressive and prolonged course of the peroneal atrophy are definitely distinctive, and the occurrence of electrical changes before and in excess of the atrophy are characteristic of the peroneal type alone.

In respect of treatment there is unfortunately but little to be hoped for. In the very early stages the administration of thyroid gland substance seems worthy of trial, on the theory that it might counteract the heredited vulnerability of the central nervous system. Carefully adapted tenotomies and orthopaedic methods may certainly add many years of active existence to the patient's life, and the significance of this is especially important in view of the protracted course of the disease. For example, a case is referred to by Sainton who at 81 could still walk about although the disease began in adolescence.

References.

[1] Tooth, H. H.: The Peroneal Type of Progressive Muscular Atrophy, Camb. Univ. Thesis, 1886; also St. Bart. Hosp. Reports, vol. xxv, and *Brain*, vol. x. [2] Charcot and Marie: *Revue de médecine*, 1886, p. 97. [3] Oppenheim, H.: *Lehrbuch der Nervenkrankheiten*, Vierte Auflage, Erste Band, S. 266. [4] Dubreuilh, W.: *Revue de médecine*, 1890, p. 441. [5] Sainton, P.: *Nouvelle iconographie de la Salpêtrière*, Tome xii, 1899, p. 206 and p. 317. [6] Siemerling: *Arch. f. Psychiat.*, Bd. xxxi, S. 105. [7] Vizoli: *Bolletin de la R. Acad. Med. Ch.*, Napoli, 1897. [8] Ormerod, J. A.: *Brain*, vol. vii. [9] Egger: *Arch. f. Psychiat.*, Bd. xxix, Hft. 2, S. 400. [10] Whiting, A. J.: *Brain*, Part 84, 1898, p. 494. [11] Herringham, W. P.: *Brain*, vol. ix. [12] Virchow, R.: *Virchow's Archiv*, Bd. viii, 1855, S. 537. [13] Bernhardt. *Virchow's Archiv*, Bd. cxxxiii, 1893, S. 287. [14] Marinesco, G.: *Archives de médecine expérimentale*, Tome vi, 1894, p. 920. [15] Gombault and Mallet: *Archives de médecine expérimentale*, Tome i, 1889, p. 385. [16] Déjerine et Soltas: *Progrès méd.*, 1893, No. 12. [17] Cassirer and Oppenheim: *Neurol. Centralbl.*, 1896, p. 718. [18] Hoffmann: *Deutsche Zeitschr. f. Nervenheilk.*, Bd. i, S. 95; and *Archiv f. Psychologie und Nervenkranheit.*, Bd. xx, S. 560.

CASE OF CHRONIC INFANTILE PARALYSIS OF TEN YEARS' STANDING: TREATMENT: RESULT.

By FRANCIS HERNAMAN-JOHNSON, M.B., CH.B.ABERD., R.N. (RET.),

SURGEON TO THE BISHOP AUCKLAND DISTRICT COTTAGE HOSPITAL; LATE SURGEON, ROYAL NAVAL HOSPITAL, PLYMOUTH.

CASES of chronic infantile palsy may be roughly divided into three classes: (1) Those of great severity, in which there is much wasting, extensive deformity, and, it may be, complete loss of the power of locomotion. Here it is obvious that surgery offers the only hope of betterment. (2) Cases in which the wasting is slight, and deformity absent; but where there is pain and aching after using the affected limb. Such are liable to be confounded with morbus coxae, but once their true nature is recognized, it is evident that no operation can be of benefit. (3) A group midway between these extremes—a lower limb, for example, is shortened, more or less wasted, and to some extent misshapen.

Cases falling into this third category are of fairly frequent occurrence in general practice. The diagnosis presents no difficulties, and the lesion is not so severe as to negative home treatment. Minor surgical measures may seem to be indicated, but in many instances the parents will not consent to anything of the kind. The question arises, what can be done?

The following case, occurring in my own practice, I venture to hope may prove not without interest:

Fig. 1.—Illustrates shortening and talipes equinus. The patient was supported by a person not visible in the photograph.

N. H., a girl, aged 14, had infantile paralysis of ten years' standing, affecting chiefly the left lower extremity.

History.

At the age of 4 the patient, after exposure to a hot sun, was seized with an acute attack of vomiting and diarrhoea, with febrile symptoms. This lasted two days. On the child recovering from the gastro-intestinal disturbance the left leg was found to be almost completely paralysed. The left arm and back muscles of the same side were also slightly affected. There was nocturnal incontinence of urine, with which the child had not previously been troubled. The paralysis followed the usual course in such cases. That is to say, there was gradual spontaneous recovery up to a certain point, and after a few months the patient was able to get about again. The limb, however, remained generally feeble. So far as I could gather, there was not at this time complete paralysis of any group of muscles, but the movements of dorsiflexion and eversion of the foot were relatively the most impaired.

Fig. 2.—Paralysed leg, showing foot drop and equino-varus.

The parents, who were reasonably well-to-do, took the child to more than one neurologist, and received in every case practically the same opinion—that the disease was infantile paralysis; that the growth of the limb would be more or less checked; and that nothing could be done except to massage the affected muscles. Electrical treatment apparently was not mentioned; at any rate, it was not impressed on the parents as a vital necessity, nor does it seem that any warning was given as to the likelihood of deformities supervening unless suitable supporting apparatus were employed.

In accordance with medical advice the limb was rubbed systematically by the child's mother, and an attempt was made to carry out graduated exercises. Some improvement resulted from these measures, but in the course of a few months it was evident that the limit of improvement had been reached and the parents made up their minds that nothing further could be done. As the years went by, relative shortening increased, contractures of the calf muscles occurred, and from a state of paresis the peronei passed gradually into a condition of almost complete paralysis.

Fig. 3.—Showing patient standing in original boot, steadying herself by the aid of a stick.

Physical Examination.

When I saw the patient, ten years after the original lesion, the left lower limb was much shrunken and wasted; there was 3½ in. of actual shortening, as measured from the anterior superior spine to the inner malleolus. The buttock muscles were flattened and the gluteal fold lost. The foot could not be bent to a smaller angle than about 120 degrees with the leg. There was complete absence of voluntary power in the peronei, but no contractures of their opponents; the foot assumed the varus position on an attempt being made to place a weight on it. The limb was clammy to the touch and of lower temperature than its fellow.

The boot worn had no stiffening of any sort, and but 2 in. of sole extension. Walking was possible only by the aid of a stick (Fig. 3), and the patient was liable to severe falls. As a consequence of the uncorrected shortening *plus* the paralytic varus, there existed marked downward (compensatory) tilting of the pelvis to the affected side, together with lateral spinal curvature and general faulty carriage.

Electrical Reactions.—Response to the faradic current was fair throughout the limb, except in the case of the muscles before specified. Even here, however, although all voluntary power was lost, a faint reaction indicated some remaining vitality.

Treatment.

Tenotomy of the tendo Achillis, together with shortening of the overstretched peronei was an obvious preliminary measure;

but the parents absolutely refused to permit anything in the nature of an operation. I had therefore to do the best I could under the limitations imposed. A three months' course (five days a week) of massage, interrupted current, and mechanical vibration (*sismothérapie méchanique* of French writers) produced very fair results as regards the thigh and hip, despite the long standing of the disease. The buttock muscles were increased to such an extent that the difference between the two sides, previously marked, was no longer noticeable when the clothes were on. At the same time, the thigh gained two inches in circumference.

As to that part of the limb below the knee-joint, however, a very short experience convinced me that little could be done by electricity, etc., without previous surgical correction. In this case, then, the only possibility of benefit lay in the provison of suitable apparatus. The usual cumbersome and unsightly "leg-irons" had been previously suggested; but the patient—a somewhat spoiled and self-willed child—had refused them. To anyone acquainted with these instruments her objection will appear not altogether unreasonable, especially when it is remembered that she could manage to get about after a fashion without any such aid. I therefore set myself to devise a boot which should support the ankle, correct the talipes equinus, so far as possible, and at the same time be neither unduly heavy nor recognizable as a surgical appliance.

Fig. 4.—Patient in new surgical boot, standing firmly on both feet.

The boot shown in photographs 4 and 5 was made to my design by a firm of instrument makers in Newcastle. Its construction is very simple. There is a cork extension having a thickness of 3½ in. at the heel, tapering to 2½ in. at the toe; of this rather more than a third is concealed within the upper. Two light steel side supports are fitted between the leather and the lining; these are furnished with flat joints at the ankle, and their lower ends are firmly attached to the sole. To correct the foot drop—that is, in so far as the retraction of the calf muscles will admit of it—finely tempered steel springs are fitted to the joints on both sides. As can be seen from the photographs, the whole boot is neatly finished, and, except for the thick sole, scarcely to be distinguished from an ordinary piece of foot gear.

The patient now walks considerable distances, still limping, of course, to some extent. Her figure and general carriage are greatly improved. She has learnt to ride a bicycle without special difficulty, and has so far met with no accident.

During the course of the treatment the nocturnal incontinence gradually disappeared. This result was not specially aimed at, but it often happens that in the course of treating a paralysed limb we get beneficial effects not originally expected, or even thought of. Remarkable improvement in the general health, both of body and mind, is not uncommon.

Fig. 5. — Side view of new boot. The outlines of steel side supports and internal cork sole are just visible.

The lessons to be derived from a consideration of the above case seem to me to be as follows:

1. Chronic infantile paralysis of medium severity occurring in persons not yet of full growth should never be regarded as incapable of improvement, even when the condition is of many years' standing.

2. Because the parents will not permit us to perform a simple and, to our minds, obviously necessary operation, we should not therefore throw up the case. It is our duty to do what we can for the patient by other means, thereby conserving the limb, and leaving the way open for surgical measures at some future date.

3. As regards paralytic deformity below the knee, leg-irons and coil-springs are not the last word in supporting apparatus. Provided expense is not a first consideration, special boots can generally be devised to suit individual cases—boots which need not be a source of constant embarrassment to the sensitive girl-patient approaching young womanhood.

4. Lastly, the fact that the patient has well-to-do and intelligent parents, desirous of giving their child every chance, is no guarantee that everything possible has been done. Each case, no matter what the history, should be considered with an open mind.

A SPECIAL clinic for the treatment of internal diseases by phototherapy has been established in the Finsen Light Institute, Copenhagen. The director of the new clinic is Dr. Rubow.

ON THE DETERMINATION OF THE TUBERCLE BACILLUS IN THE BLOOD OF PERSONS SUFFERING FROM PHTHISIS.

BY

A. MIDDLETON HEWAT, M.B., CH.B., D.P.H.EDIN.,

RESEARCH SCHOLAR, LATE RESIDENT PHYSICIAN, ROYAL VICTORIA HOSPITAL FOR CONSUMPTION, EDINBURGH,

AND

HALLIDAY G. SUTHERLAND, M.D.EDIN.,

RESIDENT PHYSICIAN, ROYAL VICTORIA HOSPITAL FOR CONSUMPTION, EDINBURGH; SOMETIME PATHOLOGIST TO THE LIVERPOOL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.

IT has usually been maintained, in relation to localized pulmonary tuberculosis, that tubercle bacilli do not occur in the blood stream. The access of the bacilli to the blood stream has been supposed to constitute the commencement of a generalized tuberculosis. Certain recent observations have raised doubts regarding the validity of this view. Thus, Rosenberger[1] has published the results of the examination of the blood of 50 cases of phthisis in various stages of the disease. In every case examined he reports having found tubercle bacilli with ease. In a later paper[2] he states that he has demonstrated the bacillus in 312 out of 312 cases examined. Later, Forsyth[3] reports having examined the blood in 12 cases of phthisis and having found tubercle bacilli in 10 of these cases.

These results, if correct, being evidently of much importance, it was suggested to us by Dr. Philip that we should undertake a further series of observations at the Royal Victoria Hospital for Consumption, Edinburgh.

METHOD.

The method adopted by Rosenberger was, shortly, as follows:

He withdrew from a vein in the arm of the patient 5 c.cm. of blood by means of a sterile syringe, previously boiled in a solution of caustic soda. This blood was at once mixed with an equal quantity of a 2 per cent. solution of sodium citrate in normal saline, well shaken to avoid clot formation, and then allowed to stand in a refrigerator for twenty-four hours. He then, with a sterile pipette, removed a small quantity of the precipitate with which he made a thick film on a clean glass slide, dried on a copper plate at moderate heat, laked in sterile distilled water, and finally stained "by the usual technique" for tubercle bacilli. From each lot of blood he made three films. He maintains that each film should be examined for thirty minutes before giving a negative verdict. Care must, of course, be taken throughout the processes to avoid contamination.

Forsyth's method is similar to that of Rosenberger, with the exception that he centrifuges the mixture of blood and sodium citrate solution "in a fast-running centrifuge for twenty minutes," instead of allowing it to precipitate in a refrigerator.

Out of 22 blood examinations done by us, 13 were performed according to Rosenberger's method and 9 by Forsyth's. As regards staining, our method was as follows:

Slides were first stained with hot carbol fuchsin for five minutes, then decolorized in 5 per cent. sulphuric acid, and finally counter-stained with a watery solution of methylene blue.

As Rosenberger indicated that tubercle bacilli could be demonstrated in the blood even before they were to be found in the sputum, we commenced by examining the blood of two patients with well-marked physical signs of consolidation at both apices, in whose sputa it had been impossible to demonstrate tubercle bacilli. Prolonged examination of four slides in each case failed to reveal tubercle bacilli.

We next examined the blood of an advanced case with double cavity formation, in whose sputum numerous tubercle bacilli were present. Again the result of blood examination was negative, notwithstanding searching examination of four slides for more than an hour each. In confirmation we again removed 5 c.cm. of this patient's blood and treated it by centrifugalization (the former sample having been allowed to stand in the refrigerator). Again the result of examination of four slides was negative.

We then resolved to extend our examination to the blood of 20 cases, varying in type from early consolidation to advanced lung condition, and in some cases accompanied

by tuberculous disease elsewhere—for example, larynx, bones, or glands. In the last 18 cases examined we had previously demonstrated tubercle bacilli in the sputum. The result of these examinations is tabulated below, along with the age, lung condition, and duration of illness of each patient. In every case four slides were prepared, and each slide was examined for at least an hour.

Name.	Age	Disease.	Duration.	Sputum.	Result.
M. J.	24	Consolidation both apices	5 years	T. B. −	Negative.
Mrs. McQ.	36	Consolidation both apices	2 years	T. B. −	Negative.
E. F.	23	Cavity both apices	2 years	T. B. +++	Negative.
E. F. (Second sample)	23	Cavity both apices	2 years	T. B. +++	Negative.
J. N.	48	Cavity left apex. Consolidation right apex	14 months	T. B. +	Negative.
C. S.	35	Cavity right middle lobe. Consolidation both apices	2 years	T. B. +	Negative.
D. D.	40	Cavity right middle lobe. Consolidation both apices	5 months	T. B. ++	Negative.
R. G.	24	Consolidation both apices	3 months	T. B. +	Positive.
R. G. (Second sample)	24	Consolidation both apices	3 months	T. B. +	Negative.
F. G.	25	Consolidation both apices	1 year	T. B. ++	Negative.
A. B.	28	Consolidation both apices. Tubercle of bones of forearm, rib, and cervical glands	3½ years	T. B. +	Negative.
T. T.	22	Two cavities left lung. Consolidation right apex	16 months	T. B. +++	Negative.
A. S. B.	19	Cavity right apex. Consolidation left apex	9 months	T. B. +	Negative.
D. F.	27	Consolidation both apices	1 year	T. B. +	Negative.
A. McL.	23	Consolidation upper left lobe. Consolidation right apex	18 months	T. B. ++	Negative.
B. C.	23	Consolidation both apices	2 years	T. B. +	Negative.
A. L.	25	Cavity right apex. Consolidation left apex. Tubercle of larynx	2½ years	T. B. +	Negative.
Mrs. P.	33	Consolidation both apices	18 months	T. B. +	Negative.
J. F.	53	Consolidation both apices	14 months	T. B. +	Negative.
A. M.	29	Consolidation both apices. Tubercle of larynx	18 months	T. B. ++	Negative.
A. F.	26	Cavity left lung. Consolidation right apex	15 months	T. B. +	Negative.
Mrs. C.	31	Two cavities left lung. Cavity right apex	4 years	T. B. +	Negative.

Analysis of our results shows them to be almost completely opposed to those obtained by the other observers. In one instance only, out of 22 blood examinations from 20 patients, was it possible to demonstrate tubercle bacilli. In this case two acid-fast bacilli were found, resembling morphologically the tubercle bacillus. A second examination of the blood of the same patient proved negative after prolonged search, so that we were led to believe that the presence of the two bacilli referred to may have been accidental.

Our observations seem, therefore, to indicate that at no stage of localized pulmonary tuberculosis is the tubercle bacillus demonstrable in the blood. Our findings are in agreement with the recently published observations of Bernstein and Fried,[5] who also obtained negative results on injecting the blood into healthy guinea-pigs.

Since the above was written Schroeder and Cotton,[4] at the United States Bureau of Animal Industry, have tested the blood of 42 cattle, in all stages of tuberculosis, by intra-abdominal injection into guinea-pigs, with negative results in every case, from which these observers conclude "that tuberculosis is not to be classified, in any sense of the word, as a bacteriaemia."

We have pleasure in expressing our acknowledgements to Dr. R. W. Philip for his advice, interest, and assistance in our work.

REFERENCES.

[1] Rosenberger, *American Journal of Medical Sciences*, February, 1909. [2] Rosenberger, *New York Medical Journal*, June 19th, 1909. [3] Forsyth, BRITISH MEDICAL JOURNAL, April 24th, 1909. [4] Schroeder and Cotton, Tests Concerning Tubercle Bacilli in the Circulating Blood, United States Bureau of Animal Industry, Bulletin 116, August 18th, 1909. [5] Bernstein and Fried, *New York Medical Journal*, May 29th, 1909.

THE SCIENCE COMMITTEE

OF THE

British Medical Association.

REPORT CXVI.

THE INFLUENCE OF THE UNSATURATED FATTY ACIDS IN TUBERCULOSIS.

BY

OWEN T. WILLIAMS, M.D.LOND., B.SC., M.R.C.P. LOND.,
HONORARY ASSISTANT PHYSICIAN TO THE LIVERPOOL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST; LECTURER IN PHARMACOLOGY, UNIVERSITY OF LIVERPOOL, ETC.

and CHAS. E. P. FORSYTH, M.B., CH.B.ABERD., M.R.C.P. LOND., D.P.H.,
PATHOLOGIST TO THE LIVERPOOL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.

(From the Research Laboratory of the Liverpool Hospital for Consumption and Diseases of the Chest.)

AMONG the many remedies advocated for tuberculous conditions none have been held in such high esteem, or stood the test of time so well, as cod-liver oil. The use of this and the free administration of fat have been recognized as no mean agents in the cure of tuberculosis. The recent additions to our knowledge of the lipoids show how important these bodies are in the animal economy, and further knowledge of the constitution, properties, and action of the compounds of various fatty acids have opened up many fields of research.

The painstaking and careful work of Leathes[1] and his colleagues has, while showing the difficulties of these problems, yielded some important results. Leathes has shown that the liver, among its other actions, has the power of desaturating fats and thus supplying the blood with unsaturated fatty acid compounds. These bodies, having loose affinities in place of the hydrogen atoms which have been removed from them, are capable of exerting chemical action in a marked degree. Moore,[2] for example, has shown the striking influence they have on haemolysis. The fish and vegetable oils contain as a rule more of these unsaturated fatty acids than do animal fats. Cod-liver oil contains them in a marked degree. The consideration of these facts has led us to investigate the action of cod-liver and other oils on the tubercle bacillus, and to contrast their action with the animal fats, to see if there is any basis for the belief in the use of this drug.

The acid-fast properties of the bacillus depend upon the presence of a waxy envelope. This acid-fast property is reduced to a minimum by bodies such as lecithin. To find if it was diminished by the fatty acids themselves or their glycerides, we performed the following experiment: An emulsion of tubercle bacilli was intimately mixed with saturated and unsaturated fatty acid compounds such as olive oil, palmitin, mutton fat, beef fat, and finally cod-liver oil. The mixtures were then incubated at 37° C. for several weeks. In the case of the saturated fat compounds staining with carbol-fuchsin and treatment in the ordinary way with acid showed after an interval of two months that the bacilli were unchanged. With the olive oil a slight change was observed, the bacilli not showing the staining reaction so well, whereas with cod-liver oil a striking change was observed. After a period of about two weeks the bacilli retained the stain less markedly, and in about two months many of the organisms failed to retain it at all, but were readily decolorized by the acid. The cod-liver oil containing a high proportion of

unsaturated fatty acids had therefore altered and, to some extent, disintegrated the natural wax surrounding the bacillus. An increase, therefore, in the amount of unsaturated fatty acids in the environment of the bacillus tends to disintegrate it.

It seems probable that in phthisis the tubercle bacillus is present not only in the lungs, but in the circulatory blood, even in comparatively early cases of the disease.[3] An increase of unsaturated fatty acids and their compounds in the blood, therefore, would tend to produce a condition which is inimical to the life of the organism. The question arises whether an increase in the unsaturated fatty acids in the food leads to their corresponding increase in the blood. That the nature of the fat in the tissues depends upon the nature of the fat in the blood has been proved for animals, but to prove it for the blood in man would require more material than is obtainable from tuberculous patients, therefore the high probability of it being so must be all we can state at present. The above evidence at least is sufficient to provide some basis for the belief which has been held in cod-liver oil and bodies containing unsaturated fats as curative agents in phthisis.

With reference to the administration of fat as an article of diet, it must be noted that an increase in the saturated fat above a certain point will retard its absorption from the intestine, the saturated form being absorbed in a small percentage only (up to about 14) whereas unsaturated fats are absorbed almost entirely (98 per cent). In mixtures unsaturated fats aid the absorption of the saturated. Therefore in a diet rich in fat the unsaturated portions must be present in sufficient proportion if full absorption is to take place. The two cases quoted below show this quite definitely, the quantity of fat being increased nearly three times, with the result that the percentage absorbed was also increased. In these cases coincident with the giving of the unsaturated fats a beneficial effect was observed on the nitrogenous metabolism. In the one case an increase in nitrogen retention occurred, in the other a diminution in nitrogen loss. The two cases in which the metabolic changes were investigated were both males.

DESCRIPTION OF CASES.

CASE I.—P. M., aged 34, an electric car driver, was admitted on May 5th, 1909. His illness dated from congestion of lungs four years before. Pulmonary tuberculosis in the second stage (Turban), with laryngeal tuberculosis, tubercle bacilli in sputum, and general health on admission poor; no pyrexia. He was discharged on June 16th, 1909, much improved and fit for light work. Weight on admission, 8 st. 10 lb.; on discharge, 9 st. 3¾ lb.

CASE II.—J. N., aged 37, a railway foreman, was admitted on March 30th, 1909; ill for six months before admission, pulmonary tuberculosis, first stage (Turban), lesion progressive in character; tubercle bacilli in sputum; general health fair; no pyrexia, but throughout treatment liable to digestive disturbances. Discharged on June 8th, 1909, improved and fit for work. Weight on admission, 9 st. 8 lb.; on discharge, 9 st. 12 lb. In both cases the observations were carried out in the same manner. For the first period of the experiment the ordinary diet was continued, consisting of:—*Breakfast:* 6 oz. bread, ½ oz. butter, 1 egg, 20 oz. coffee, including 10 oz. milk.

Dinner: 6 oz. meat, 6 oz. potatoes, 6 oz. vegetables, 2 oz. rice, ½ oz. sugar, 10 oz. milk.

Tea: Same as breakfast.

Supper: 2 oz. bread, 10 oz. milk.

The diets were exactly weighed for each meal. The amount of fat in the meat was approximately the same. Particular attention was paid to this because of the amount of fat present in lean meat, and, moreover, the butter given each day contained a good deal of unsaturated fat; so the patient was taking mixed fats even in the ordinary diet. The ordinary methods used by Harley[4] were adopted of measuring, collecting, and estimating the various quantities. The nitrogen was estimated by the Kjeldahl process, the fat with Werner-Schmidt tubes with controls by Soxhlet extractions.

In the subsequent periods the patient was allowed as much fat as he could eat, with the adidtion of 1 oz. of cod-liver oil after each meal.

Both patients occasionally objected to taking large amounts of cod-liver oil, so that for the purposes of the experiment olive oil was at times substituted. Olive oil, containing oleic acid, is full of unsaturated fatty acids, but in all probability it does not have the influence of cod-liver oil, because the latter contains bodies of a higher degree of unsaturation.

The results of the observations were as follows:

CASE I.—*P. M., aged 34. Weight 8st. 10¾lb.*

First Period (8 Days).	Nitrogen.		Fat.		
	Intake.	Output.	Intake.	Output.	
	Grams.	Grams.	Grams.	Total Fat.	Neutral Fat and Fatty Acids.
May 17 ...	22.58	7.92	93.4	8.52	5.53
„ 18 ...	18.38	12.73	77.56		
„ 19 ...	22.58	13.93	93.4	6.37	4.46
„ 20 ...	22.58	17.43	93.4		
„ 21 ...	22.58	9.11	93.4	17.8	9.9
„ 22 ...	18.33	11.02	77.56		
„ 23 ...	25.9	15.6	95 52		
„ 24 ...	23.3	12.51	93.4		
	176.28	100.55	717.64	32.69	19.89

Weight at end of First Period, 8 st. 13½ lb.; gain 2¾ lb. Gain of nitrogen, 75.63 grams; absorption of fat, 95.5 per cent.

Second Period (One Week).—During this period the amount of fat was considerably increased, butter being given in larger quantities, and at least 3 oz. of cod-liver oil daily.

	Nitrogen.		Fat.		
	Intake.	Output.	Intake.	Output.	
	Grams.	Grams.	Grams.	Total Fat.	Neutral Fat and Fatty Acids.
May 25 ...	20.45	5.88	245.0	12.06	10.67
„ 26 ...	24.65	10.36	250.84		
„ 27 ...	24.65	6 86	260.84		
„ 28 ...	24.65	5 85	232.84		
„ 29 ...	21.93	6.48	219.52	9.72	8.81
„ 30 ...	24.65	7 09	260 84		
„ 31 ...	24.65	5 87	260.84		
	165.63	48.39	1,740.72	21.78	19.49

Third Period (One Week).—During this period the patient resumed his *ordinary diet as in the first period.* (No estimations made.) *Weight* at end of third period, 9 st. 1¾ lb.; loss, ½ lb.

Fourth Period (Eight Days).—During this period the diet was the same as in the second period, the fat increase consisting as much as possible of unsaturated fats.

	Nitrogen.		Fat.		
	Intake.	Output.	Intake.	Output.	
	Grams.	Grams.	Grams.	Total Fat.	Neutral Fat and Fatty Acids.
June 7 ...	24.65	8.61	260.84	8.49	6.61
„ 8 ...	20.45	5.7	245.0		
„ 9 ...	24.65	8.52	260.84	8 25	6.9
„ 10 ...	22.65	4.2	260.84		
„ 11 ...	24.65	6.4	245.0		
„ 12 ...	20.45	5.67	207.52	14.09	9.23
„ 13 ...	25.18	8.42	260.84		
„ 14 ...	22 65	5.58	260.84		
	185.33	53.10	2,001.72	30.83	22.74

Weight at end of fourth period, 9 st. 3½ lb.; gain, 1¾ lb. Gain of nitrogen, 132.33 grams; fat absorbed, 98.5 per cent.

The average number of calories per diem in the food ingested was:

First period	3,000
Second period	4,666
Third period	3,000
Fourth period	4,417

CASE II.—*J. N., aged 37. Weight, 9 st. 6¾ lb.*

First Period (One Week).	Nitrogen.		Fat.	
	Intake.	Output.	Intake.	Output.
	Grams.	Grams.	Grams.	Total Fat.
April 21	—	—	94.04	6.68
,, 22	22.34	26.19	94.04	
,, 23	22.82	24.27	93.08	10.91
,, 24	18.54	37.94	77.56	
,, 25	22.89	23.91	94.04	20.61
,, 26	—	—	93.40	
,, 27	18.69	24.07	78 20	
For 5 days ...	106.28	146.38	624.36	38.20

Weight at end of first period, 9 st. 7 lb.; gain ¾ lb. Loss of nitrogen, 40.1 grams (over 5 days). Absorption of fat, 93.9 per cent.

Second Period (One Week).—During this period a considerable quantity of unsaturated fat was added to the diet.

	Nitrogen.		Fat.		
	Intake.	Output.	Intake.	Output.	
	Grams.	Grams.	Grams.	Total Fat.	Neutral Fat and Fatty Acids.
April 28 ...	22.44	29.30	93.08	33.07	15.01
,, 29 ...	22.74	18.79	121.40		
,, 30 ...	22.74	19.94	150.40		
May 1 ...	18.54	22 86	103.56	18.19	12.89
,, 2 ...	23.56	24.59	117.49		
,, 3 ...	22.74	24.90	121.40		
,, 4 ...	18.54	21.48	103.56		
	151.32	171.89	810.59	51.12	27.9

Weight at end of second period, 9 st. 8½ lb.; gain, 1½ lb. Loss of nitrogen, 20 51 grams. Fat absorption, 93.7 per cent.

Third Period (One Week).—During this period a still greater quantity of unsaturated fat was added to the diet.

	Nitrogen.		Fat.		
	Intake.	Output.	Intake.	Output.	
	Grams.	Grams.	Grams.	Total Fat.	Neutral Fat and Fatty Acids.
May 5 ...	22.96	24.53	255.34	45.73	36.18
,, 6 ...	23.18	21.46	255.34		
,, 7 ...	22.96	19.62	255.34		
,, 8 ...	17.63	22.22	255.54	26.82	21.36
,, 9 ...	25.56	22.08	201.49		
,, 10 ...	22.96	26.14	255.24		
,, 11 ...	18.53	20 52	239.5		
	151.58	155.61	1,665.89	72.55	57.54

Weight at the end of the third period, 9 st. 8 lb.; gain, 1½ lb. Loss of nitrogen, 4.03 grams. Fat absorption, 95.7 per cent.

The average number of calories per diem in the food ingested was:

First period	2,936
Second period	3,383
Third period	3,915

Both patients improved very considerably during the trial, and neither of them suffered more than a little passing discomfort from the large amount of fat administered. It was left to themselves to have these amounts reduced, but this was necessary only on one or two days. They both increased in weight, and their general feeling of well-being was notable. This was especially the case with regard to the patient P. M., who was by far the more advanced in disease on admission. In his case, along with the increased absorption of fats, there was a pronounced increase in nitrogenous retention.

The second patient, J. N., pale and flabby, had been more or less of a dyspeptic for years, but even in his case the oil rarely gave any trouble. His fat absorption went up during the period of maximum administration, and his weight showed steady increase throughout. In the first period of observation under normal diet conditions, he showed considerable nitrogen loss. This loss was reduced about 50 per cent. in the second period with the added fats, and reduced about 90 per cent. in the third, when the greatest amount of unsaturated fat was given.

CONCLUSIONS.

1. Bodies containing unsaturated fatty acids have the power of disintegrating the waxy envelope which surrounds the tubercle bacillus.

2. The nature of the fat in the food influences the nature of the fat in the tissues.

3. The administration of substances rich in unsaturated fatty acids may therefore be of value against the bacilli in the body. The dissolution of the waxy sheath may itself be fatal to the organism, or, this dissolution being effected, the bacillus may be rendered easier of attack by ordinary body forces.

4. The unsaturated fatty acids and their compounds aid the absorption of other kinds of fat.

5. With the administration of these bodies there is a beneficial effect on nitrogenous metabolism as well.

[Our thanks are due to Dr. C. A. Hill, Physician to the Liverpool Consumption Hospital; to Dr. John Owen, Assistant Physician; and to Dr. Henry Clarke, Physician and Superintendent of the Research Laboratory, for much kind help. We are also greatly indebted to the Matron and to Nurse Pugh for valuable assistance, without which the greater part of the work would have been impossible.

The expenses of the work were partly provided by the British Medical Association Science Committee.

REFERENCES.

[1] *Lancet*, February 27th, 1909. [2] Moore, Wilson and Hutchinson, *Journal of Physiology*. [3] Rosenberger, *American Journal of Medical Sciences*, February, 1909. Forsyth, BRITISH MEDICAL JOURNAL, April 24th, 1909. [4] *Chemical Investigation of the Diseases of the Stomach and Intestines*, Harley and Goodbody.

SEVENTY-SEVENTH ANNUAL MEETING

OF THE

British Medical Association.

Held at Belfast on July 23rd, 24th, 26th, 27th, 28th, 29th, and 30th.

PROCEEDINGS OF SECTIONS.

SECTION OF MEDICINE.

Professor JAMES ALEXANDER LINDSAY, M.D., F.R.C.P., President.

DISCUSSION ON ANGINA PECTORIS.

OPENING PAPERS.

I.—Sir T. CLIFFORD ALLBUTT, K.C.B., M.D., F.R.S.,*
Regius Professor of Physic, University of Cambridge.

AT the outset of the present discussion we must ascertain precisely what is to be discussed, and in what terms. Concerning angina pectoris some precision, both of terms and of substance, is especially needed, for no disease has been more obscured by factitious notions, or more confused by false analogies and erratic conjectures. Yet in all medicine there is no disease which presents a clearer image to the observant eye, nor one more conspicuously emergent from the clinical jungle. If its characters are confused we have confused them by our equivocations; if

* The substance of this paper was first published at the meeting of the Eastern Counties Branch of the British Medical Association at Yarmouth in 1894, and has been published repeatedly since; for instance in the Lane Lectures of 1896, and before the Fitzroy Square Hospital staff and their friends in 1907. At Belfast, time compelled me to omit some paragraphs of this paper, the manuscript of which was handed to the Secretaries.

its type is blurred it has been overridden by alien forms. Let angina pectoris be looked at simply, without prepossession and with discrimination, and its features will come into focus and the type will take fair definition.

Much has been made of the frequent difficulties of diagnosing the disease, of its swarm of mixed and counterfeit cases and phenomena; yet I do not hesitate to say that there are few diseases in which puzzling cases or eccentric phenomena are so infrequent. The puzzles are engendered not of the disease, which is remarkably uniform, but of the sophisticated minds of its observers.

For we are confronted by the sophist on the threshold, who says bluntly that angina pectoris is not a disease, but is a symptom or "symptom group"; it is here, indeed, that the sophistry begins. This dogma is but a play of words. "A symptom" angina pectoris certainly is not, for it is manifold; a symptom group it is no doubt, or rather a symptom process or procession. Now when is a disease not a disease but a "symptom group"? One of the abler sophists has told us; he says "a symptom group differs from a disease in its various causation and various pathological bases," which is surely to propound that similar series of events can have dissimilar causes—a somewhat amazing proposition. If a single symptom—a cough, for example, or a pain in the side—may be attributed roughly to various causes, it is unthinkable that a group, a long and fairly uniform array and procession of events, can issue from causes in the main different. Indeed, it cannot be said very decisively that even a single symptom, such as a cough or pain, may own various causes; even within this narrowest limit the acute and expert physician may often perceive that coughs and pains of several origins are not identical in character. Vomiting, by its particular mode, usually betrays the kind of causes to which it is due; and to describe a toothache carefully to a dental surgeon is usually to indicate likewise the kind of its causes. And as we turn from a symptom to a "symptom group" the correspondence of causes and consequences becomes more and more inevitable. A symptom group—that is, a procession of symptoms, both negative and positive—which recurs in man with fair uniformity, must be due to causes no less uniform; it is for this reason that we are justified in attaching to such groups labels and names, and in relegating each group to its class as a disease among diseases.

All our classifications are, of course, arbitrary. They are justified not by the absurd supposition of several "entities," nor by supposing that such compartments, required as they are by the exigencies of the human mind, exist in Nature. A disease is nothing more—we can mean no more by the term—than a fairly uniform symptomatic series, not recurring with identity—there were never of any disease two cases alike—but with such a measure of uniformity as to make it worth while to describe it separately and to label it. It is a strange thing that those disputants who talk most glibly about "morbid entities" are among the first to shuffle these labels, and to mix up our classes. On the merest superficial resemblance they will shuffle cardiac dyspnoea under asthma, the convulsions of cerebral gumma or of uraemia under epilepsy, high pressure or uraemic dyspnoeas or vaso-vagal squalls under angina pectoris, and so forth. This is no digression. My argument is to state that angina pectoris, both in respect of its positive and of its negative symptoms, is such a fairly uniform mode of morbid change, and that it is the name of a class of cases founded not upon superficial but upon profound resemblances.

We are apt to forget that as in describing a man we reckon the good qualities as well as the bad, so the functions which remain unperverted, or but slightly perverted, are as much symptoms of a disease as are the morbid phenomena. In angina pectoris, for instance, certain of the negative symptoms, such as the comparatively normal respiration and the comparatively normal circulation, are as important in diagnosis as the positive symptoms. That the series named angina pectoris may and often does occur with the heart, lungs and kidneys intact, is admitted, more or less reluctantly, by observant and experienced physicians; and, if this be so, then the essential, as apart from contingent, miscarriage must lie outside these members.

Of the positive symptoms, on the other hand, the chief is pain; not, as the books copying from one another recite in the "precordial region," for it very rarely occupies this region; it arises, as the earlier writers more correctly stated, at or under the sternum. In angina minor it occupies the manubrium, or the middle third, of the breast-bone, and scarcely travels from this part. Another considerable symptom is an arrest of voluntary movement—an imperious and almost automatic arrest, even of the breathing. A third is a vague sense or apprehension of evil; if in angina minor, the *petit mal* of this disease, it is not often an alarm of imminent death, yet the sufferer is usually aware of some strange and sinister touch.

Of *angina minor* there are four more features which, if not constant, are certainly characteristic—namely, that the pain is brought out by muscular effort only; that the arterial pressures are positively increased; that it is almost as common in women as in men; and that the pain, if foreboding, is not deadly. In angina major, on the other hand, the paths of the pain are far more irritable; it is often called forth by inward tides of pressure not obviously due to muscular movement; not rarely, indeed, during sleep. And in the major form, if it be true that commonly the arterial pressures range above the normal mean, such is by no means always the case; in this variety the focus of the disease is so resentful that pressures not praeternormal often suffice to exasperate it. Fourthly, angina minor is not an infrequent malady; some cases end in recovery; some, under the stresses of high arterial pressure, are fatal, but in the usual courses of cardiac defeat; some advance into angina major. Its prevalent physical signs, if more than those of high arterial pressures, pertain to atheroma, arterio-sclerosis, and dilatation of the ascending arch of the aorta.

Angina major is a more instantly perilous, a more terrible and happily a less frequent variety of the disease than angina minor, which, however, is only a little less sinister in meaning. In the major form the pain, starting in the same area as in angina minor—namely, in or under the breast-bone, especially the upper half of it—does not hang about the part, but, usually centred there, darts in well-known directions across the upper chest and into the arm, usually into the left arm and into the ulnar area of it; sometimes into both arms, very rarely into the right arm only. In some cases the pain is driven up the neck, or into still broader areas; in others it starts somewhere upon the periphery, but usually at a point constant for the particular case, or the particular stage of it. In this form of the disease, the attacks of which often arise as it were spontaneously, life is in more instant jeopardy. Generally speaking, the pain is far fiercer than the oppressive check of angina minor; too often it racks the very depths of bodily anguish. Albeit, when fatal, it is with a swift and unseen arrow, which strikes as often, more often indeed, in the feint of a slight or prelusive attack than in the heat of the battle for life.

Between these two modes of angina, minor and major, there are, of course, intermediate or transitional cases, though they are less frequent than might be supposed.

To one confronted by angina pectoris in its more appalling aspects, or even by the menace of its minor form, the appearance in these dreadful lists of the unsubstantial phantoms of mere functional malady must surely seem fantastic. Were angina and its counterfeits even superficially more alike, the association would still be a conspicuous example of the error of classification by superficial rather than by profound resemblances. Landois drew this red herring across the path, Walshe unfortunately followed him; and from that time we have had to deal not so much with lack of precision as with a certain precision of error in this matter. No one has proved more clearly than has M. Huchard that "pseudo-angina" means pseudo-diagnosis; yet whether in more friendliness for such men as Nothnagel and Eulenburg than for truth, or allured by the desire of the French temperament for symmetry and antithesis, instead of brushing these mockeries impatiently aside, he retains them for the decoration of his categories. For our own part, let us dismiss these soft options of nosology, these teacup tempests, from our charts of angina, and remit them for a more profitable contemplation, in their proper place and season, to the class of maladies well described and arranged by Sir William Gowers under the label of "Vaso-vagal Disorders."

Notwithstanding, in discussing angina pectoris we cannot pass over vasomotor oscillations without attention.

If I venture to think Sir Richard Douglas Powell has attributed too much importance to them in angina, still it is true that, both as concomitants and as contingent causes, they have some part in the matter. That vaso-constriction frequently, and vaso-dilatation not rarely, ensue upon irritation of afferent nerves we are well aware. As in migraine, in ovarian irritation, in severe intercostal neuralgia and so forth, so in angina the pain may play upon this sympathetic instrument. And not only so, but as all approaches of angina, major and minor, may depend immediately upon transient increments of arterial pressure, on whatever levels, it is plain that any influence which brings about vaso-constriction, such as a chill wind or a creepy emotion, by raising the blood pressure may determine a seizure. But no such wave of constriction, not even the vasomotor convulsion of ague, will produce an attack in a person free from the local lesion proper to angina. In a word, the vasomotor phenomena congruent with angina, sometimes derivative, sometimes subsidiary, are incidents; they do not partake of the nature of the disease.

I must now endeavour briefly to appreciate and to compare the current hypotheses of angina pectoris. As it is said in therapeutics that our command of a disease is too often inversely as the number of its remedies, so I may say that our knowledge of the causation of angina pectoris is inversely as the number of our conjectures.

The hypothesis of angina as the outcry of a passive ventricle under dilating stresses—the hypothesis advanced with easy assurance a few years ago—has now few defenders, or is abandoned. Against it I think no further argument is needed, though it keeps creeping back furtively. But it is recognized that dilatation of the heart in all its forms is far too vulgar an event to be concerned in a series of phenomena so infrequent and so startling as angina; and moreover that the symptoms of dilatation are not those proper to angina.

Recently a more novel and apparently a more attractive hypothesis is an analogy founded upon the symptoms of intermittent claudication, or stumbling of the legs, first described in cases of disease of the abdominal aorta in horses. Angina has been attributed to such a claudication of the heart in cases of coronary atheroma—a pretty fancy. But it is surely sufficient to point out that in attacks of angina the rule is that the heart does not stumble, until in death it stumbles once for all. The time of this Section is not to be wasted in speculations about a faltering which in the cardiac rhythm or output is wholly or almost imperceptible.

Another notion, that angina is a cramp of the heart, is likewise discredited by the usual persistence of normal rhythm and output throughout an attack; moreover, cramp is contrary to all we know of the physiological properties of this unique organ; or, as I ought rather to put it, cramp or clonus is not the abnormal but the normal action of the cardiac muscle—an action normally not balanced by antagonists, nor delivered by parcels, after the manner of voluntary muscular mechanism. The cramp disputants, therefore, have had to whittle down their hypothesis to imaginary remnants; some are guessing at discordant cramps or twitches in portions of the myocardium, others speculate on "abnormal contractions akin to spasm"—a distinction worthy of Duns Scotus.

Some observers of the present time, among whom are physicians of the eminence of Sir Lauder Brunton and Dr. Samuel West, finding the dilatation hypothesis on the one side, or the cramp hypothesis on the other to be insecure, have endeavoured to patch up an alliance of the two; they suppose a crampy dilatation—a stretched contraction or a contracting stretch. For an analogy they offer us the pain of a hollow muscular organ, the urinary bladder for instance, when distended by a content which at the same time it is striving ineffectually to expel—an illustration which, like Mr. Pickwick's dark lantern, bewilders without enlightening us. For probably in the case of the distended bladder, the pain is not in the muscular coat, but is set up by the drag upon the parts about its neck and the prostate, for the fine nerve-twigs passing to the fibres of visceral muscle are generally regarded by physiologists as motor. So far, then, as this argument may be apt for our purpose it must be handed over to me; for I attribute angina pectoris to such a drag upon the neck of the aorta. However this may be, the bladder, in the case supposed, is striving with a content which is not expelled; the heart, on the contrary, in the attack of angina, even during the worst of the paroxysm, is continuing steadfastly to deliver its tale of blood, per beat and per minute, with a tranquillity and effect which under any hypothesis are rather surprising. This it may be doing against high pressures, it is true; but so, both in health and disease, the heart is continually called upon to do, and does in diseases of other kinds even perennially; yet in such common cases we hear little of angina major or minor; anginoid pain is no characteristic symptom of aortic stenosis, nor of chronic renal disease, even under the extremest arterial pressures. To invite us to accept two hypotheses in combination because neither of them can stand alone, reminds me, Sir, of a young priest, a native, I believe, of this part of the kingdom, who, being instructed to provide himself with a housekeeper of not less than 40 years of age, wrote after some delay to his bishop saying that he had been unable to secure a housekeeper of 40 years of age, but that he had succeeded in engaging two, each of 20, a combination which he trusted would meet with his lordship's approval.

Dr. James Mackenzie has offered us partial conjectures rather than a complete hypothesis on the causation of angina pectoris; he supposes that the heart, which has its other four qualities intact, is deficient in contractility; that the stoppage, and perhaps some of the pain, are due to a summation of stimuli, but that the vice-like element of the pain is due to cramp of the muscles of the cage of the thorax. The alleged "cramp" of the heart or its parts Dr. Mackenzie admits to be unthinkable; but still he seems to me to be harking back towards the old dilatation hypothesis. In his book on heart disease, he says (pp. 40 and 42), "The phenomena of angina pectoris are not the outcome of the gross lesions found, but are evidence of exhaustion of the heart's contractility"—though without any reduction of tone. Yet he says (p. 54), although "this exhaustion is the essential cause of angina . . . it is not dangerous," "and the phenomena disappear with the restoration of the nerve force." Then what in it is dangerous—the gross cardiac lesions? But often enough there are no such lesions, or not in sufficient degree of themselves to cause death. And, as to the pain, we know of no severe pain from exhaustion of striped muscle. The arrest of the heart in a week, in a year, or in decade of years, may be due, as the attacks themselves may be due, to a "summation of stimuli"; the pains indubitably do depend upon an exalted state of the sensory paths; but the stop is not the angina, nor can it be an essential part of it, for plenty of people pass through the tribulation of angina and come safe out of it, not a few, indeed, safe and sound; others suffer for many years, and die in the end of associated or intercurrent disease. Of grave maladies, angina pectoris is one of the more curable. Thirdly, as to the dynamic explanation of the "gripping sensation of angina," which Dr. Mackenzie attributes to "spasm of the intercostal muscles" so decisively that he "would even limit the name to cases in which, besides the pain, there is a sense of contraction in the chest . . . as if the breast-bone would break."[1] As to this renaming I must insist again that our nomenclature is already too shifty and careless for us to make things worse by removing, or altering, labels which for some generations have been attached to fairly uniform morbid series, unless, of course, in the progress of knowledge some radical alterations become inevitable, and our way to them clear. If from day to day, on any wind of doctrine, we are to be shifting our labels, precise argument becomes impossible. Is, then, the part taken by intercostal spasm in the disease, if any at all, so intimate as to determine its name? Now, the vice-like pain of angina—major and minor—although of all degrees, from "stenocardia" to an unutterable agony, is in kind, in seat, and in menace, peculiar; it varies only in the number of the turns of the screw. The intercostal muscles, when in action, do not crush the breast-bone inwards; they expand the chest. Moreover, if in cramp, they would, as in all muscular cramps, give pain in proportion to their volume. The respiration in angina is arrested, it is true, but, in my opinion, by vagus inhibition. A frequent area of anginous pain is that of the left pectoral muscles, but it is not by any constraint of theirs that the patient may be deterred from grasping the arm of his chair, or from taking the

[1] J Mackenzie, *Symptoms* 1909, p. 235.

medicine cup in his hand; he is transfixed by the writing on the wall. He could move an he dare. In muscular cramp we may howl or rage; angina pectoris is beyond all raging. By the bed of a strong man in an attack of the major angina the very chamber is silent with awe. In this agony—the uttermost torture, so we are told, in the rack of disease—the wit of the physician only is still vigilant; and can he see in this strait no more than the plucking of a few chords of fiddle-string muscles at the patient's ribs! Some variable reflex fixation of such muscles there may be, but the anguish is of far deeper, far grimmer significance. Even of attacks of trigeminal neuralgia no man ever died.

Again, that the awful and fatal visitation of angina pectoris can be but the waft of a "neurosis" would have seemed too fantastic a notion for experienced physicians to entertain, had it not been announced by persons of importance, and taken so seriously that, after searching in vain for the disease in Nothnagel's *System* under the head of cardio-arterial diseases, I ran it down at last among nervous diseases, whither a distinguished physician had relegated it—a ghastly companion for neurasthenia, hysteria, feminine nerve-squalls and mimicries. A "neuralgia," a "vascular crisis," a "hyperaesthesia," a "nerve-storm"!—need I delay you on levities which the author of *Nightmare Abbey* would have called philosophic gas? "Pseudo-angina," I repeat, is pseudo-diagnosis. The pale horse and his rider are not of these phantoms.

To the observation of Lancereaux, and later of Dr. Mott, on an inflammation of the cardiac plexus in angina I need do no more than allude; this plexus is not a sensory but motor instrument, and can solve nothing of our problem. The same disqualification, I think, applies to Dr. Morison's interesting case of lesion of intracardiac ganglia. But, so far as I remember, none of these eminent observers has definitely alleged that the origin of angina pectoris lies in these parts.

Dr. Francis Hare's recent surmise that angina pectoris is due to morbid tension in the mediastinum is very interesting to me, as an approximation to the truth.

The dominant explanation of angina pectoris I have left to the last, that which may be called, briefly, the coronary hypothesis—the almost tiresome burden of "angina coronaria" of the school of Huchard, and of Romberg and others in Germany. Now, in the first place, to predicate some lesion of the coronary arteries, even as an essential constituent of its pathology, is not to explain the process. It does not display the dynamic mutations, the functional swerve, which this lesion is supposed to produce. Coronary disease will explain the angina only when it discloses the mode of the deviation from the normal tenor, "the unhallowed string which vilely jars." However, for a moment we will leave processes for pathological deposits; we will try to decipher upon the tissue of the parts the graphic inscription of their discords; but once more, if we are to succeed, we must begin our lesson, not with those records which are overwritten, interpolated, or corrupted, but as in other scientific investigations, *per viam exclusionis*, with the simplest we can find. Yet, perhaps without exception, authors have followed an opposite method. One eminent physician, for instance, by way of a ready entrance upon this inquiry, explicitly set down "coronary atheroma, myocardial degeneration, aortic disease, aneurysm, high arterial pressure," and a few more dilapidations, as parts of his problem. Involved in such complications, how are we to see our way to separate the invariable from the incidental antecedents and associations of the process? In order to advance *per viam exclusionis*, we ought, on the contrary, to collect from examples of the disease, typical in their clinical aspect, those in which the pathological conditions, precedent and associated, were not the most but the least complex; so that, if possible, a common denominator might be found.

In discussing the coronary hypothesis, however, we are a little embarrassed to find that many, indeed most, of the cases of angina which, on clinical grounds, we should pronounce to be, while fully typical, the simplest in conditions, do not find their way to the *post-mortem* table; that for the most part, indeed, the cases in young persons, and those detached from intercurrent disease, end in recovery; and are thus withdrawn from autopsy. The inference, however, is that, if the recovery were complete, the heart in these was substantially sound. As these instances are many,[2] the presumption may well be that static disease of the heart is not an essential element in our research.

If there be but one authentic case of angina pectoris in which after death the heart was found either indubitably normal or indifferently affected, then we cannot escape the dilemma that either the clinical diagnosis was wrong or cardiac disease was not an essential element in its causation. Yet such a record would be very far from unique. The cases in which by their clinical features angina pectoris was clearly delineated, yet in which after death the heart was found intact, are far too many to be laid before you to-day. Again, the cases are also a multitude in which, although cardiac disease was found, the nature or seat of it was various and inconsistent. Many such records I have published already, others I must leave for the fuller essay on this subject which I have in preparation. Briefly, they fall into two categories—namely, cases in which the coronary arteries were diseased but the myocardium, both to the naked eye and to the microscope, was intact, the notes of which, it is true, may lie under some suspicion of inaccuracy; and cases in which neither coronary arteries, myocardium, nor valves presented any departure from health. Such cases, if rare in the *post-mortem* room, are more or less reluctantly admitted to be authentic by orthodox champions—by Balfour, Broadbent, Cohnheim, Fraenkel, Romberg, Baccelli, and many others, who, notwithstanding, seek to evade the inevitable inference. Rosenberg, however, in summing up this part of the argument, confesses that no hypothesis will serve which depends on enfeeblement of the function of the heart muscle ("*Verminderung der Leistung des Herzmuskels*"). And Dr. James Mackenzie has demonstrated that in angina pectoris four, at any rate, of the five cardiac qualities, including tone, are, or may be, unaffected. The usual way of avoiding this issue is to say, on the rebuff of the necropsy, "Oh, well, then the case was not one of angina pectoris"; although during life the diagnosis had never fallen into doubt. Call no man anginous till he is dead, and not even then unless he has played the game! At a recent cricket match a batsman whose middle stump had flown at the first ball, cried out in his bewilderment, "No ball, umpire!" The reply was, "The ball was right enough, sir." "Oh, then I was not ready." Or the attitude may be compared to the alternatives of the pleader: "Taffy did not steal the shin of beef; or, in the alternative, no one saw him do it; or if some one did, then it was not Taffy, or if it was Taffy, the beef was his own," and so forth. Thus for the angina we try to set up an alibi. Is it not absurd to be told, whatever the clinical witness may have asserted—even so good a witness as Dr. West, who says of such a contested case that it had "the same characters as angina pectoris," in other words, a physician of his experience and ability could see no clinical difference—that the disease was not itself at all, but something else under the same name, a sort of poor relation?

Seriously, is this the method of natural science wherein, as Professor Bateson says, "a chief maxim should be to treasure our exceptions"?

When witnesses so trustworthy as Broadbent and Fraenkel admit that angina may occur before coronary disease has brought about any changes in the myocardium, when not even a microscopic confusion of the striae can be detected, and, yet in the same breath protest that "in angina the state of the heart walls must be the dominant factor," do not we overhear an echo of Vesalius's final submission to the dogma of desudation of the blood through the pores of the ventricular septum? And when, again, Fraenkel, in the fourth edition of Eulenburg, while clinging to the coronary hypothesis, concedes that in some cases of angina the coronary arteries are proved after death to have been sound—"*durchaus intakt*"—are we not listening again, not to the man who treasures his exceptions, but to one whose judgement is subjugated to conventional dogma? Professor Dieulafoy[3] describes two cases of fatal angina in which he tells us "there was no coronaritis, a proof that obliteration of the coronaries is by no means the sole cause of angina pectoris," and these words he writes in italics; and yet even he cannot but strike up

[2] See, for example, Morel-Lavallée, L'angor pectoris non-coronarienne, *Rev. de méd.*, October 10th, 1899.
[3] *Pathologie Interne*, 1908.

again the old chant—coronary disease, ischaemia of the heart, angina pectoris, death!

Time will not permit me to quote such test cases by chapter and verse; they must be carried over to a more comprehensive essay. And, amid all this reliance, or assumed reliance, upon the coronary link, our attention is cleverly diverted from the facts, that on the one hand men are dying daily with coronary disease, and that, on the other hand, angina pectoris is a somewhat rare disease. Few elderly men die without as much coronary disease as would serve for the complete outfit of a coronarian disputant. And the phenomena of coronary embolism and the like, says Professor Osler, give us no help in the explanation of angina. Well might Lubarsch, in a critical summary of the argument last year, acknowledge that the secret of angina was as yet unread; that the problem still contained "noch ein unerklärliches Etwas."

But you may urge, did not Jenner trace angina pectoris to coronary disease; and in Hunter's case prove his hypothesis by foretelling this lesion? Why, to foretell coronary atheroma in the cardiac failure of an elderly man is no prodigy of prophecy; but I happen to have read Jenner's Letter, and to have noted how, with true scientific caution, he did not attribute the angina to the coronary changes; he stated simply that after death by angina coronary disease would be found. So, as a humble follower of this great man, I say likewise; but I would add, that the coronary disease was not the cause of the angina, but the reason why in Hunter's case unhappily the angina proved fatal.

Spasm of the coronaries is freely invoked by pathologists as a way out of the puzzles of their own making, and to explain cases of angina in which no coronary disease could even plausibly be alleged. One eminent man speaks of "spasm of the coronaries causing high vascular tension within the myocardium." Try to think out *that!* But of a neuro-constrictor endowment of these vessels there is no evidence, but much to the contrary. Their variations of calibre are directly as the cardiac oxydative activity. Nay, the very notion of neurotic caprices in this momentous region would indeed suggest a new and alarming possibility, even to the healthiest of us, of whiffs of angina, and of the trembling balance of life.

Hitherto, in the destructive part of this essay, I have found little difficulty. Many of the competing hypotheses were mutually destructive, others were inherently perishable. *Ipsae periere ruinae.* But now I have to address myself to construction, I have myself to give hostages to fortune. You will forgive me if in this place I do no more than formulate my hypothesis, and refer you for what I call my proofs to former and later papers.

I repeat that for proof, as for disproof, we must rely on cases selected for simplicity; cases stripped, so far as may be, of accretions. Death is not an essential but an incidental issue of the disease. If, in the many cases of relative simplicity whose nature was happily veiled by convalescence from our scrutiny, we cannot give a direct demonstration of the pathological focus, yet in life or in death the clinical series is usually unmistakable enough for the discriminating physician who will but use his eyes and forget his prepossessions. He will convince himself that a disease which not infrequently ends in recovery, especially in young persons, cannot have its primary seat in an irreparable lesion of vital parts—such, for example, as obliterative disease of the coronary arteries or myocardial decay. Its causes must be compatible with complete recovery, and yet be such as may prove swiftly fatal. Now in an inflammatory or subinflammatory lesion occupying the suprasigmoid portion of the aorta with its investment these conditions are fulfilled. Suprasigmoid syphilis is, perhaps, the most instructive process of those which may be accompanied by angina. In this state we find an infiltration of the coats of the vessel extending in anginous cases from the adventitia, or at any rate involving this investment. On the inner surface we may see a cushion-like elevation of the wall, often of more or less annular disposition; this, if untreated, will extend downwards to the coronary mouths and to the valve, producing perilous and incurable mischief. The older the patient and the more this kind of damage, especially in the coronary area, the more probable is sudden death; the less able is the heart to withstand a sudden inhibition.

Howbeit, you will exclaim, is this not to forget that in angina pectoris we are dealing with a terribly fatal disease, a disease in which death is more imminent than in any other; how can a stroke so mortal come of a mere sore spot in the wall of the aorta? Can it be of this that the patient may presently swoon and die? How can such a thing be? My answer is that the patient does not die just of his sore spot; when he dies, it is indirectly by vagus inhibition. In the few recorded instances in which the finger of the physician has been on the pulse at the moment of the patient's death—an opportunity which once fell to Professor Thayer—the records are that suddenly the pulse faltered, staggered, and stopped. I have noted, not rarely, especially in elderly persons, this impression of the vagus on the pulse during attacks which did not end in death; the pulse may be felt to slacken and lag, to tarry under the finger, and then, escaping from its too anxious nurse, to go again on its way in safety. Some augmentor reinforcement had saved it. We may note that, frequently or even generally, death intervenes not at the acme but before the seizure attains its worst, before there is time for readjustment; and these phenomena of clinical medicine may be illustrated abundantly by experiment on animals, and by kindred events in the lesions of disease.

Dr. Hugh Anderson has shown me how the stellate ganglion between the first two thoracic segments may readily be removed, whereby the heart is deprived of augmentor capacity. Now if this operation be done in a young cat the disability may be not easily demonstrable. But if it be performed on an old cat, however healthy its heart may seem, this ambiguity vanishes; for if in this condition the animal be waved in the hands, up and down, so as to bring the vagus into action, the ordinary cat pulse of 120 may be reduced to about 40. Indeed the animal is so liable to die suddenly that farther observations may thus be terminated.

Dr. Gaskell thinks a sudden sharp stimulus to the vagus has more of the depressor effect and less of the anabolic and restorative effect than more gradual interference. Still, the healthy heart of young subjects manages nearly always to escape in time; its readjustments are both elastic and ready; with the deteriorated or even with the merely old heart it is not so. As the active youth slips his foot and promptly saves himself, but the unready muscles and stiff joints of the elderly man fail to respond in time, and he falls before he can save himself, so it is with the heart, when imperceptibly altered by age, or enfeebled by coronary or other disease—it cannot save itself, it topples, regains a step perchance, loses it again, and drops.

Time will not permit me to do more than remind you of this danger, even to the healthy heart, in many not unfamiliar events in clinical medicine; how by the pang of a gall stone, or by a blow on the testicle, a healthy heart may be stopped for ever; nor can I do more than allude to the experiments upon animals. Dr. Ferrier tells us that a pin-prick in the vagal nucleus will arrest the heart. Roy showed that to stab the aorta in the part I have indicated may stop the heart suddenly; more surely in old animals. Capper and Lewis, both in animals and in man under surgical operation, have demonstrated the increasing susceptibility of the vagus mechanism, and the increasing peril of death, as a stimulus is carried inwards and upwards from the more peripheral tracts of the pleura towards the structures about the root of the lung.[4] Again, the surgeon by bitter experience has learnt that "Nature" is only too ready to make this kind of demonstration for him; for instance, during operations on the brachial plexus—the region, by the way, with which we are often concerned in angina—or on the neck; so that, now forewarned, he blocks her too officious response by a local sedative; as in angina I block it by the exhibition of atropine, or try to block it, but too often Nature is quicker than Art. Though proof by necropsy has been wanting, I have strong reason to believe that I have seen the arrest of a sound heart by angina, as I have proved a sound heart in a sound body to have been arrested by a gall stone; many such cases are on record.

[4] Since the Belfast meeting, Dr. Johnson, British Medical Journal, September 11th, 1909, has demonstrated fine nerve ramifications in the suprapleural connective tissue investment, which he regards as the paths of pleuritic pain.

The dread—the *metus deliquii*, which by no means runs parallel with the pain—I am disposed also to attribute to some echo in consciousness of the vagus crisis. We have records of certain cases of bulbar disease, of growth involving the vagus, and the like, in which the appearance of an *angina sine dolore* pointed strongly to this being the path of the symptom. Conversely, fear may strike down the vagus path with fatal results.

My own attention was especially drawn some years ago to the suprasigmoid area by certain clinical observations which seemed to indicate that the part is peculiarly susceptible to changes of blood pressures, as if by its nervous endowments it might have some regulative function in this respect. I guess that the investments of this part of the aorta are furnished with Pacinian bodies whose function it is to indicate pressure changes to their segment of the cord; and that if these bodies, and their pain columns, be submitted by disease to a morbid summation of stimuli the corresponding spinal segment, or—in case of longer or intenser irritation—spinal segments, are thrown into a state of agitation which is expressed in greater and lesser degrees as pain. Under ordinary circumstances these messages are passed from point to point in silence; but if in high aortic pressures the suprasigmoid parts are impaired, the resentment may take the form of angina minor—a state which perhaps may be something short of a coarse lesion of the fabric of the vessel; but if there be active lesion, then arterial fluctuations, on whatever planes, may throw the associated nervous centres into wider and wider circles of agonizing vibration, and functional dispersion. Under these circumstances of quivering alertness, however, the surprise of sudden death is less frequent, for the vagus is sooner tired than the augmentors. It is in the startle or nip of an incipient seizure that the fully charged vagus may sever the thread of life, even before the patient is aware of his peril. Oftentimes, indeed, it is only by inference that the name of angina is extended to cover the fatal event.

Concerning the mechanism by which the pain is awakened I cannot as yet speak precisely. I have suggested that in the sheath of the ascending aorta Pacinian bodies will be discovered whose sensitiveness in other parts to pressure, and especially to dragging tensions, are well known. Hitherto I have not been able to obtain dissections made with this purpose; but in Dogiel's classical papers[5] I read that these end apparatus are found in the connective tissues of the pericardium[6] and in the investments of other parts about the collar of the heart and large vessels. The pain is of the kind which in many degrees belongs to investing tissues. That of acute pleurisy, far less vital—less intimate, as it is, yet is similar in kind. In inflamed tendons or ligaments, where Pacinian bodies are abundant, the pain is likewise agonizing—as, for example, in acute gout. In a few cases of sudden embolism of a coronary artery, or myocardial rupture, a stretching pain like angina pectoris has been recorded, and may be due to tension of investments.

To the treatment of angina pectoris time permits me to do no more than allude. The lesion or abnormal irritability of the suprasigmoid aorta commands us to reduce arterial pressures to the utmost which the conditions of the particular case allow. The rest must be to the level which is consistent with abeyance of the pain. My orders are: Never bring on the pain; every renewal of it keeps up the sum of stimuli. If for this end absolute stillness in bed be required, then bed it must be; with the corresponding reduction of food. Thus, if at first the attacks are not abolished, they will be mitigated, and will gradually taper off. The subsequent imprisonment must be determined by the sagacity of the physician, guided by the sensations of an intelligent patient. At the same time all those measures, medicinal, dietetic, and other, which are known or supposed to reduce arterial pressures will be enforced. Sir Lauder Brunton's potent means, the nitrites, are indispensable.

To guard against vagus inhibition atropine must be administered regularly. In very painful cases morphine may be needed also. I suggest that an icebag applied cautiously and intermittently to the upper thoracic spine may prove helpful. The possibility of syphilis must be thoroughly discussed and tested by pathological and clinical methods; and, if discovered, or even suspected, resolute treatment, chiefly by mercurial inunction and the iodides, must be prescribed. Empirical experience suggests that iodides in some dose should be administered in all kinds of the disease. Specific remedies for any general morbid condition, as for acute rheumatism, gout, hyperpiesis, etc., will not be forgotten.

Of new remedies two have seemed in my experience to be efficacious, more especially in angina minor—namely (*a*) the high frequency current, and (*b*) the administration of the lactic acid bacillus on the method of Metchnikoff. Baths and massage cannot be prescribed in any urgent stage of the disease. Causes of eccentric irritation must be discovered and neutralized. The patient must be warned never to swallow quickly, nor to bolt large morsels. Diuretin and aspirin have their advocates. Chloroform is very dangerous in angina. In syncopic failure of the heart artificial respiration should be tried.

[5] *Arch. f. mier. Anat.*, 1898, p. 66, and 1903.

[6] In previous papers I have drawn attention to the occasional angina of pericarditis (Pawinski, Samuel West, and others). I owe much in this part of the subject to conversation with Dr. Hugh Anderson.

II.—Sir Lauder Brunton, Bart., M.D., F.R.S., London.

Sir Lauder Brunton said that one cause of diversity of opinion regarding the causes of angina pectoris was the absence of exact experimental knowledge regarding the sensory nerves of the heart. Meetings like the present had the great advantage that conflicting opinions could be quickly compared and more advance towards truth made in half an hour than by months of writing in journals. Every one must have been charmed by the clear and eloquent exposition by Sir Clifford Allbutt of his views regarding angina pectoris, though they would not agree with all Sir Clifford's statements. His own idea that the pain of angina pectoris was akin in kind to colic in the intestine or spasm of the bladder had been swept away by Sir Clifford, who thought there was no pain in muscle but only in fibrous investments. But the bladder or intestine, with freer fibrous investments, might be enormously dilated, and no pain was felt until the involuntary muscles in these organs contracted, and Kronecker had shown that the muscular fibres of the heart were capable of cramp. One reason of the discrepant opinions in regard to angina was, as he had suggested, the want of experimental knowledge regarding the sensory nerves of the heart. Sir Clifford had said that the nerves of the cardiac plexus were all motor, but Schmiedeberg, in Ludwig's laboratory, had shown that many were sensory or, at all events, afferent. He thought Sir Clifford had done great service by bringing prominently forward the aorta as the source of pain in angina pectoris. It was probably a source and an important source. But it was also in all probability not the only one. One objection to dividing angina into major and minor lay in the implication that there was only one kind of angina, the cases being all the same in kind and differing only in degree. He thought there were probably several kinds of anginal pain not yet differentiated, but having a different pathology, just as colicky pains in the abdomen might proceed from irritating food, flatulent distension, appendicitis, perforating ulcer, or even the passage of calculi, biliary or renal. The present use of the terms "angina" and "pseudo-angina" indicated that the conditions to which they were applied were at least two in number, and differed in kind and not only in degree.

This opinion was borne out not only by their prognostic significance but by the results of treatment. Pseudo-angina occurred, as a rule, in the young, was not of serious import in regard to the patient's life, and was little or not at all relieved by nitrites. True angina occurred, as a rule, in the elderly, was of very grave import as indicating danger to the patient's life, and was usually relieved for the time by nitrites or other vaso-dilators. He thought also that the seat of pain gave indications in the thorax, just as it did in the abdomen, of the source of the pain. Sometimes, no doubt, the pain in cases of appendicitis might be felt above the navel, but as a general rule the pain indicated more or less the seat of the disease.

In cardiac pain there were two chief points of election—(1) over the sternum, and (2) over the apex. That over the sternum probably started from the aorta, and that over the apex from the ventricle.

After all, the proof of the pudding was the eating of it. In 1867 he observed that rise in tension occurred along with angina, and probably caused it. He gave nitrite of

amyl; the pain disappeared, and nitrites had continued to be used with success ever since. This seemed to him to be strong evidence in favour of this theory.

The apical pain might come on apart from any sternal pain. He considered that while radiation of pain might be responsible for its extension in severe cases, yet there was another factor which should not be left out of account—namely, that high tension in the aorta itself must affect the walls of the heart itself, to which it passed through the coronary arteries.

He felt sure that angina pectoris was sometimes directly fatal, but he agreed with Sir Clifford that cases—even very severe ones—might apparently recover entirely and remain apparently well for years.

He wished to retain the term "pseudo angina," because he thought that it led to a proper distinction in treatment. Such cases, as a rule, required tonic treatment and exercise, like cases of neuralgia, while true angina required extreme care in regard to over-exertion, and needed vascular depressants, such as nitrites and iodides.

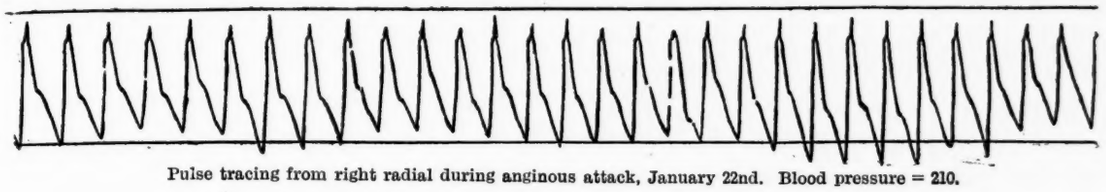
DISCUSSION.

Professor W. OSLER, F.R.S. (Oxford), said that on the question of pronunciation he confessed himself in a more fortunate position than the Chairman or Sir Clifford. When in the presence of a college don or a great "stickler" for the proprieties of language, he said angina, but in the presence of the ordinary man he adopted Horace's rule, and followed the common usage and said angina. And it was a comfort to know that there were authorities for both. So far as the speaker's aortic theory of the condition, his experience grouped the cases in three categories. First, those with disease at the root of the aorta—either syphilis, which was a common cause in young men, or aneurysm, particularly the small growing sac just above the valves. He dwelt on the importance of recognizing the syphilitic form, as treatment was often followed by cure. Secondly, cases with disease of the coronary arteries alone or combined with myocarditis. In men above 40 it was rare to find coronary disease without some sclerosis of the aorta, but occasionally one met with instances in which the arteries alone were involved, and he gave details of a case in which the root of the aorta was uninvolved. And lastly, in a few fatal cases neither aorta nor coronaries were diseased. He referred to a case of this kind which he had reported. Such were rare, but there were a few on record. He felt it was impossible to bring all cases into Sir Clifford's category, and his theory had difficulties such as had been spoken of in connexion with the six so admirably criticized. Personally, he confessed to a weakness for the intermittent claudication theory, which was not new, but was formulated in clear language by that remarkable man, Alan Burns of Glasgow, whose little book on the heart, 1809, was full of interesting material. The difficulty about this theory was that in ordinary claudication from arterial disease there was no pain. In the form of angina of effort the arrest was very like that of intermittent claudication, and yet the heart's action might be normal. Possibly the peculiarities of the disease might be associated with the remarkable intracardiac system of neuromuscular fibres, the study of which had thrown so much light of late years on cardiac pathology.

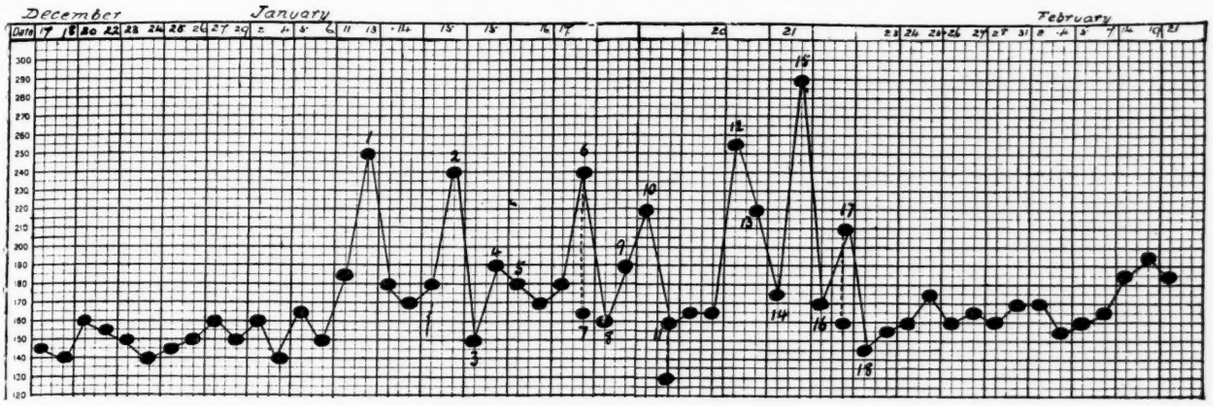
Dr. W. K. HUNTER (Glasgow) said that it was recognized that patients with disease of the aorta were specially liable to attacks of dyspnoea, sometimes there being pain, sometimes simply distress in breathing. In such cases there might be little apparent change in the circulation, and in particular there need be no increase in the blood pressure. It had been shown experimentally that by stimulating the inner coat of the aorta just above the aortic valves a reflex spasm of the bronchi and of the branches of the pulmonary artery might be produced. As a result there would be increased resistance to the entrance of air into the lungs, and the blood would get less oxygen and give off less carbonic acid gas. It was quite conceivable, therefore, that aortitis might account for a proportion of the cases of angina pectoris, especially those cases where there was no apparent cardiac lesion or little change in the blood pressure. But it was difficult to be sure that that explanation would hold for all cases of angina. The speaker narrated the following case that had been under his care, where each paroxysm of pain was associated with great increase of blood pressure, and where vaso-dilators gave immediate relief. It was difficult to be convinced that in this case vaso-constriction was not the primary factor in the production of the paroxysm. The patient was a steel worker, aged 38, and he was admitted to hospital complaining of attacks of severe cardiac pain, which would come on suddenly after any physical exertion. He had not been able to work for eight months, as the least exertion brought on the pain. There was no history of rheumatism or syphilis. The patient was strong and well developed; pulse rate 72. The heart was considerably enlarged, the percussion area extending 1½ in. to right of the mid-line and the same distance to the left of the nipple line. There was a double aortic murmur; but the lungs were clear and there was no oedema of the feet. The urine had a specific gravity of 1023, and contained a trace of albumen. Blood pressure on admission was 145 mm. Hg. While in hospital the patient had many attacks of severe angina, and in some of these the blood pressure was carefully noted by the resident physician, Mr. J. Lang. As will be seen from the chart (p. 1129), the systolic pressure during a paroxysm would rise as high as 240 mm. Hg, then one minute after administration of amyl nitrite it would fall to about 150 mm. Hg, going up again to about 190 mm. Hg two minutes later. It would fall again to 150 mm. Hg when the attack had ceased. The severe pain would last a variable time, sometimes an hour, sometimes only fifteen minutes. But nitrite of amyl relieved the pain almost immediately, though the effect might soon pass off and the pressure rise again if the attack had not ceased. The patient said that with the onset of an attack he was conscious of the beats of his heart becoming stronger and stronger, and on examining the pulse one could feel each beat becoming more and more forcible. Whatever the pathogenesis of the angina in this case might be, the rise of the blood pressure, due to vaso-constriction, was regarded as the initial factor in the production of the pain, and the treatment was directed at producing vaso-dilatation. Such treatment was always at least temporarily successful, and the prolonged administration of potassium iodide, sodium nitrite, and such like drugs seemed ultimately to have a beneficial effect in the way of lessening the tendency to recurrence of the disease. The vaso-constriction, it might be contended, was secondary to the pain, but as far as could be determined in this case the vaso-constriction was the initial factor.

Dr. WM. GORDON (Exeter) said: I only venture to intervene in this discussion to refer to two observations which seem to me to have a bearing on any discussion of the origin of angina pectoris. The first relates to the curious fact that an attack of angina not uncommonly occurs during sleep—that is, in recumbency. I have repeatedly observed that a pulse which is rather full between the beats (to use the late Sir William Broadbent's excellent term) when the patient is sitting, becomes much more full between the beats when the patient lies on his back. The difference is not transient—is not a mere passing effect of the change of posture—but seems to indicate a higher blood pressure in the recumbent position. The second observation bears on the statement often made that, where actual heart disease is absent the heart is not dilated in the anginous attack. I cannot speak from actual examination of such a case since I observed the fact to which I am going to refer, but I lately saw a case, with a very able medical man, of sudden faintness in a boy who had been over-smoking. My friend had seen him for the first time and in the attack; consequently he had only been able to examine him on his back. He found no evidence of dilatation of the heart, as indicated by percussion. Neither did I in that posture. But the boy was better, and I could safely sit him up. In posture there was obvious evidence of dilatation. It seems to me that we must therefore bear this effect of posture in mind in discussing the presence or absence of dilatation in angina pectoris.

Dr. J. HADDON (Hawick) said he remembered the case in which Sir T. Lauder Brunton first gave nitrite of amyl, and there could be no doubt that in that case the pain was coincident with the high arterial tension, and was relieved by the lessening of the blood pressure which that drug



Pulse tracing from right radial during anginous attack, January 22nd. Blood pressure = 210.



Explanation of Blood Pressure Chart.

1, Systolic pressure during a paroxysm—12 midnight, January 13th.
2, Systolic pressure during a paroxysm—11.30 p.m., January 15th.
3, Systolic pressure immediately after inhalation of amyl nitrite—11.31 p.m., January 15th.
4, Systolic pressure two minutes later—11.33 p.m., January 15th.
5, Systolic pressure fifteen minutes later—attack ended.
6, Systolic pressure during a paroxysm—2.15 a.m., January 17th.
7, Diastolic pressure at same time.
8, Systolic pressure one minute after inhalation of amyl nitrite—January 17th.
9, Systolic pressure three minutes after inhalation of amyl nitrite—January 17th.
10, Systolic pressure ten minutes after inhalation of amyl nitrite—January 17th.
11, Systolic pressure sixty minutes after inhalation of amyl nitrite—attack over.
12, Systolic pressure during a paroxysm—5.15 p.m., January 20th.
13, Systolic pressure after inhalation of amyl nitrite—5.16 p.m., January 20th.
14, Systolic pressure two hours later—7.15 p.m., attack over.
15, Systolic pressure during paroxysm—3.50 p.m., January 21st.
16, Systolic pressure after inhalation of amyl nitrite—3.51 p.m., January 21st.
17, Systolic pressure 4 p.m.—January 21st.
18, Systolic pressure, 4.45 p.m.—January 21st.

caused. It might therefore be concluded that the difficulty the heart had in acting had to do with the angina. He mentioned the case of a big stout farmer who had angina, could hardly walk along the level. By diet having reduced his weight he was able to climb steep hills. Fat, then, as well as high arterial tension might be a cause of angina, and by reducing fat improvement would result. As to the aorta being the seat of trouble, one pathologist had found that every aorta in those dying after 25 years of age had calcareous degeneration. If the aorta was degenerated was it not likely that the smallest vessels would be degenerated? Angina might occur when the heart was apparently quite healthy, and seeing that it was paroxysmal it must depend upon some reflex influence from some peripheral outpost on the skin or intestinal mucous membrane. Psychologists were now saying that particular delusions could be traced to particular parts of the intestinal tract, and it might be found that angina pectoris might be classed with such delusions, affecting only a different (lower) centre, and, as it had been found in diabetes that if the patients ate only their physiological minimum of food, they could eat anything, so in angina it might be found that attention to diet would prevent or even cure it.

Reply.

In his reply, Sir Clifford Allbutt stated that time had not been permitted him to enter fully upon treatment, on which he had very definite opinions, dependent upon his views of causation. He might briefly distinguish, however, between palliative and radical treatment. Reductions of blood pressure were, as Dr. Gordon's observations proved once more, invaluable as palliation, but for radical treatment further measures were necessary. As to aneurysm, lesions of this kind were apt to cause angina when seated in the first part of the aorta. He was glad that day to welcome two more disciples to his hypothesis that an aortic lesion could produce all that morbid series of events which they named "angina pectoris"; for if this were granted, the controversy was surely at an end. There was (so far as extensive search had enabled him to ascertain) no single case of angina pectoris on record in which the investments of the root of the heart and aorta had, on adequate examination, proved to be healthy, whereas the cases were many in which the heart had proved to be normal or affected only in some irrelevant way. Moreover, if it were admitted, as now it must be admitted, that angina pectoris in the strict sense might arise from aortic lesion, surely it could not be admitted that a prolonged and grave series of events, recurring with fair uniformity, could own two or more dissimilar sets of antecedents. As a defiance of the economy of causes, such a supposition was so highly improbable that nothing short of the most minute demonstration could be accepted to the contrary. As regards the seat of pain, there was a cardiac pain, a weary, depressing ache in the submammary area, which was not angina pectoris, and did not resemble it; but sometimes, as Sir Lauder Brunton observed, the two kinds of pain concurred in the same case. As to the cases again edged in under the title of Pseudo-angina, the opener was obliged to decline to recognize them as falling within the subject of the day. The opinion of Dr. Gaskell that the cardiac plexus and intracardial ganglia were motor and not sensory had been continuously fortified. Dr. Hugh Anderson's researches went to prove the part played by the investing tissues of all viscera—of the mesentery, for instance, and by analogy of the aorta—as the apparatus of painful impressions. Developmentally considered he regarded these investments as cutaneous or subcutaneous tracts dragged inwards with the more and more inward packing of the more and more elaborated viscera.

We learn from the *Boston Medical and Surgical Journal* that at a recent meeting of the Prison Congress, held at Seattle, an able paper on sterilization of habitual criminals was presented by Dr. H. C. Sharp, formerly of the Indiana Reformatory. Four hundred and twenty-one sterilizing operations have been performed with a successful outcome, and the measure is now sanctioned by the law of Indiana. Several women spoke warmly in favour of the "Indiana Idea," as did also Mr. Longfitt, of Pennsylvania, who stated that that State was at present caring for 150 feeble-minded descendants of one family. Delegates from California and Connecticut quietly stated that those States have likewise adopted the "Indiana Idea."

SECTION OF LARYNGOLOGY, OTOLOGY, AND RHINOLOGY.

STCLAIR THOMSON, M.D., F.R.C.P., President.

PRESIDENT'S OPENING REMARKS.

DR. STCLAIR THOMSON, after some preliminary observations, drew attention to the necessity of observing the views of the Association with regard to the length of speeches. The programme, he said, had been carefully drawn up, and he took it as a good omen that several friends devoted to the same department as himself had been candid enough to condemn its contents as being uninteresting to oto-laryngologists. He was of opinion that at the annual meetings they should not devote themselves to the discussion of remote and recondite questions on otology and laryngology, but more usefully spend their time in deliberating questions in which the profession at large had a direct interest. The work of the specialist led him to explore unknown and untraversed regions, but as soon as they had been surveyed, and some knowledge of them attained, they should be handed over to the practitioner of general medicine. Tinnitus aurium, one of the subjects to be discussed, was a symptom which any one might be asked to treat, and the meeting of the Section offered a good occasion for learning the different views held by the various otologists gathered together. The other special discussion was to be carried on in conjunction with the Section of Hygiene and Public Health, and was of equally practical interest to every one, seeing that it dealt with latent cases of diphtheria. For obvious reasons, however, it had likewise a special interest for the laryngologist. The PRESIDENT then called on Dr. Thomas Barr to commence the first discussion.

DISCUSSION ON THE TREATMENT OF TINNITUS AURIUM.

OPENING PAPERS.

I.—THOMAS BARR, M.D.Glasg.,

Lecturer on Aural Surgery, University of Glasgow;
Senior Surgeon, Glasgow Hospital for Diseases of the Ear, Nose, and Throat.

NON-OPERATIVE TREATMENT.

IT has been thought desirable, in carrying on this discussion, to divide the subject into (1) the more purely medical treatment, and (2) the operative methods; and it has been arranged that I should specially deal with the medical or non-operative methods.

Subjective sounds in the ear, by virtue of their frequency and their distressing and often intractable character, are a subject full of practical interest not only to the otologist, but also to the physician, the surgeon, and the general practitioner. In the worst forms, tinnitus is frequently associated with vertigo, and, indeed, these two symptoms are so closely allied, especially in primary labyrinthine affections, that some may think the discussion should have included vertigo. Tinnitus, however, occurs so frequently, apart from vertigo, and is so often the chief symptom complained of, that it has been thought well to limit the discussion to this very common symptom of auditory disturbance.

Even by itself, the subject of the treatment of tinnitus is too large for exhaustive discussion, because, like defective hearing, with which, of course, it is generally associated, it may be connected with almost every disease of the ear, external, middle, and internal. Indeed, its detailed discussion would take us over the whole field of otology.

It is a truism to say that the effective treatment of a symptom (for we are dealing not with a disease, but a symptom) depends largely upon a correct knowledge of the condition underlying the symptom. Here, no doubt, the proximate cause of the tinnitus in all cases is some form of irritation of the terminal apparatus of the cochlear nerve, but for effective treatment we must get at the *source* of the irritation. It is obviously, therefore, our first duty, in treating a case in which tinnitus is a symptom, to make a thorough examination of the organ of hearing by all the subjective and objective methods at our command, in order, if possible, to determine the disease upon which it depends, and to treat that; here, as in all other cases of disease, the success will largely depend upon the accuracy of the diagnosis. It is no doubt difficult, and sometimes impossible, to differentiate the pathological conditions present in the ear.

We may find the underlying disease to be of the simplest character, such as the pressure of ceruminous or epidermic accumulations in the meatus, when a stream of hot water, propelled by a syringe, is sufficient to banish a tinnitus which may have been a great source of annoyance for months, or even years; or we may find it to be due to the effect of Eustachian obstruction upon the tympanic tension, when an equally simple therapeutic measure, namely, inflation by Politzer's method, may get rid of it; or it may be caused by pathological products in the tympanic cavity, such as mucus, serum or pus, when its disappearance may follow incision of the tympanic membrane followed by inflation. Or it may be caused by an acute otitis media, or by purulent middle-ear disease, or its consequences, when the treatment suitable for these conditions will in most cases bring about the disappearance of the tinnitus. When associated with and caused by these various conditions in the external and middle ear the treatment is usually very satisfactory, but the methods of treatment are so well recognized and agreed upon that they are probably not intended to come within the sphere of this discussion.

Much less satisfactory in regard to treatment is the tinnitus associated with new formation of connective tissue in the tympanic cavity, or that associated with otosclerosis, or with auditory nerve involvement, whether intralabyrinthine or intracranial. These are unfortunately the most frequent underlying conditions, and are the cases for which otologists eagerly and earnestly desire improved methods of treatment—they are therefore well fitted for investigation and discussion. A monument truly awaits the man who finds an effective remedy, surgical or medical, for the hitherto incurable forms of tinnitus. As in all more or less incurable affections of the human body the number of remedies is in inverse proportion to their value, and there is a special risk, in investigating their value, of confounding *post hoc* with *propter hoc*.

General and Medicinal Treatment.

I would, first of all, emphasize the importance of a careful review of the state of the general health and the habits of the patient, so that appropriate treatment—medicinal, hygienic, dietetic, mental—may be employed to rectify, if possible, any departure from healthy conditions. In this direction good is, no doubt, often achieved. Perhaps we do not give sufficient attention, in these cases, to the general examination of the patient; to determine the condition of the heart, the arteries, the blood, the alimentary canal, and especially the urinary secretion. Such an examination may provide a clue to the real cause of certain forms of tinnitus. I have repeatedly found the presence of albuminuria, glycosuria, or a heart lesion give a very different complexion to the significance of tinnitus and provide a valuable guide to treatment.

We shall often find that the digestive or hepatic system is at fault, inducing a gouty or rheumatic tendency, giving rise to temporary or permanent vasomotor disturbance in the labyrinth. In such a case alkalis and saline aperients or a course of alkalo-saline waters, such as Carlsbad, with an occasional mercurial, in addition to judiciously regulated diet and habits, would, of course, be the true indications. Some patients remark that, after a blue pill at night, followed by a saline aperient in the morning, they enjoy a day or two's respite from the noises—this might point to the proper direction of treatment.

We shall in many cases find a neurasthenic condition present, the result of nerve exhaustion or depression, such as in the case of the overtaxed student, or the harassed business man, or the worried housewife. How often one is consulted owing to the occurrence of a troublesome tinnitus, perhaps without any hearing defect, in a student hard pressed with an examination, or in a person who has passed through a great trial or bereavement, or a serious crisis in business! In these cases the ears may be unusually vulnerable from predisposition, or from the existence of some long-standing although unknown pathological condition. The general nervous disturbance strikes at the vulnerable place. No doubt the neurasthenic condition may be an *effect* rather than a cause of tinnitus. In either case these patients often require a prolonged

period of rest with change of air and surroundings, supplemented by such remedies as a course of the glycerophosphates, strychnine, or arsenic. They must avoid over-anxiety, worry, and all strong emotions, the object being to bring about, by whatever means, a healthy state of the nerve centres.

Anaemia is often associated with tinnitus, especially in the form due to otosclerosis in adolescents—this would, of course, be dealt with by means of iron, arsenic, nourishing food, fresh open air, etc., often with distinct advantage. In my opinion the treatment of the tinnitus of otosclerosis should be general rather than local, and our endeavours, therefore, in these cases should be largely directed to raising the patient to a higher level of health by proper hygienic and medicinal remedies. If the syphilitic cachexia be present, either manifesting itself in the labyrinth or in the interior of the cranium, it goes without saying that this must be dealt with by appropriate treatment. In like manner, if Bright's disease, arteriosclerosis, glycosuria, or diabetes be present, the co-operation of the physician would probably be enlisted in carrying out the treatment.

In the pulsating form of tinnitus, especially if due to cardiac disturbances, digitalis is indicated, and no doubt it sometimes exercises a good effect. In others it seems to have no effect even in the purely pulsating form of tinnitus. In similar cases strophanthus is advocated by some, but I have not had any experience of this medicine. I think we are all pretty well agreed that alcohol in any form tends in most cases to aggravate the tinnitus, and I am usually in the habit of forbidding or very much limiting its use.

We have been hearing a good deal lately about fibrolysin or thiosinamine, which has been termed "a solvent of pathological fibrous tissue," as a remedy just for the conditions where we are sadly in need of improved remedies, namely, fixation of the ossicles, adhesions, and indurations in the tympanic cavity as well as otosclerosis. The statements as to its mode of action in these cases have been calculated to arouse eager expectations. Hirschland and Urbantschitsch write favourably of its effects in some cases. The former says that in certain cases where the hearing was not influenced the tinnitus became less. On account of the somewhat encouraging reports of these gentlemen, many of us have tried it in the kind of cases suggested. My son has used it subcutaneously in a dozen or so of cases, but so far he has not been greatly encouraged by it. However, further trials are being made, and perhaps some of the gentlemen present may have had more extensive experience, and may favour us with their results. It is very difficult to decide as to the real worth of treatment when only a small number seem to be benefited; we know how the neurotic element enters into many cases of tinnitus, and here, therefore, the apparent good which follows a new mode of treatment may be the eager hope acting on the fond imaginings.

The prolonged use of phosphorus, as advocated by Siebenmann and others for the tinnitus attending otosclerosis, has not, so far as I know, been much tried in this country. Certainly I have myself never yet employed this form of treatment, which consists in the daily use of phosphorus for months, and even years. I have had patients who used it in accordance with prescriptions by Continental doctors, and while its long-continued use did not seem to have the toxic effects one would have feared, there seemed to be no appreciable benefit derived.

Are there forms of tinnitus in which quinine in very large doses exercises any beneficial effect? We are all familiar with the fact that this medicine has an influence upon the circulation of the internal ear, and is thereby a frequent cause of tinnitus. As a remedy for tinnitus, however, I have not been able to make up my mind that it has a useful effect, and hesitate about prescribing it, even in conjunction with large doses of hydrobromic acid, owing to the distinct possibility of its having an injurious effect. The same question may be asked regarding salicylate of sodium or aspirin. It is sometimes prescribed when a rheumatic or gouty cause is suspected, but I must say that I have been always dubious as to the wisdom of giving this medicine in cases of tinnitus. I would, however, be very much interested in hearing the opinion of others regarding the value of salicylate of sodium in tinnitus.

What is the value of sedatives or hypnotics in these cases? I think most of us are agreed that the bromine preparations are useful in certain kinds and phases of tinnitus. While in many cases their long-continued use is undesirable, a large dose given at bedtime, when the tinnitus is so severe as to prevent sleep, is often distinctly helpful. In such cases I am in the habit of prescribing it at bedtime, with other suitable treatment during the day. The bromides of sodium, ammonium, or potassium, or the combination of the whole three, seem to me more effective than hydrobromic acid. A course of bromide of ammonium, however, combined with the syrup of the glycero-phosphates, does very well in some cases. If the continued use of bromine is indicated, hydrobromic acid is probably to be preferred to a bromide, and may be conveniently combined with such medicines as strychnine or arsenic. Such a combination has sometimes seemed useful in my hands. Lugar recommends tablets of bromipin solidum saccharatum, which is a combination of bromine with sesame oil, made by Merck, as specially useful for the relief of noises. He thinks it acts even better after a course of fibrolysin. In very severe and persistent forms a more definite hypnotic may be necessary. I have had a patient who, in order to procure sleep and respite from tinnitus, had to take for over a year a full dose of paraldehyde every second night, alternating on the other nights with a drachm of bromide of potassium. These generally secured a restful night without apparently being followed by injurious effects.

Are iodine preparations often indicated? In the forms of tinnitus associated with vertigo, due especially to acute labyrinthine disease, iodide of potassium, in large doses, may be employed and probably with distinct advantage, even in cases where there is no evidence of a syphilitic cause. In cases where there is a suspicion of intracranial disease such as a tumour (syphilitic or otherwise) or the products of a meningitis we would naturally prescribe iodide of potassium. In the form of iodine vasogen applied externally, iodine is said to be more thoroughly absorbed; a few drops should be rubbed extensively behind the ear night and morning. This I have used pretty often, and, when continued for a length of time, seems occasionally to yield beneficial results. Politzer believes that iodide of potassium, in large doses, checks the ossifying process in the early stages of otosclerosis. The inunction of iothion ointment (10 per cent.) is recommended by Berliner of Breslau, in the tinnitus of otosclerosis; it may be applied behind the auricle or other parts of the body, such as the inner surfaces of the thighs or arms. A few of my patients have gone on with this for several months, but I am not yet in a position, from my limited experience, to offer an opinion as to its value. These remedies have the advantage of being conveniently applied by the patient at home.

Pilocarpine, in spite of some notable abuse in the past, must be regarded as of value in suitable cases. In acute labyrinthine cases, employed hypodermically, it is undoubtedly useful, in a certain proportion, probably by virtue of its powers of stimulating the absorbents in contact with effused products, before these have become organized. This resorbent effect has, no doubt, a connexion with its remarkable effects in exciting the cutaneou and salivary secretion. Pilocarpine seems to have an especial action upon the intracranial absorbents, and the vascular and lymphatic supply of the labyrinth is in reality from the same source as those of the interior of the cranium. There is pretty general agreement that in those cases of effusion into the labyrinth associated with vertigo in Ménière's series of symptoms, the pilocarpine treatment, when cautiously carried out and the patient's general condition admits of its use, is undoubtedly indicated.

The question of climate is an important one. In most cases a dry, bracing, inland, upland air, if not too cold, often exercises a beneficial effect. The humid air of the seaside frequently aggravates the tinnitus. An open-air life, without over-exertion, is desirable if practicable.

What about external applications to the neighbourhood of the ear? I do think they sometimes have at least a mitigating effect. Patients undoubtedly seem in some cases to be benefited, at least for a time, by vesicants over the mastoid region, such as cantharides or the liniment of iodine, repeated several times. Milder applications, such

as the liniment of mustard or spirituous embrocations, are also worthy of a trial, and are recommended by Politzer. Sedative or stimulating ointments such as camphor, oil of peppermint, and vaseline, applied with friction or as massage over the mastoid region and neighbourhood, are not infrequently favourably spoken of by patients. Whatever may be the explanation, many persons seem to think that this does them good. Local blood-letting by leeches has been tried in the pulsating forms, but I have only found it useful in pulsating tinnitus due to an acute middle-ear inflammation. No doubt mental influence may in such cases account for the apparent improvement. On the other hand, the attention thereby given by the patient to the sounding in the ear may in some cases have an injurious influence. I have not been much encouraged by the results of massage in the few cases which I have put into the hands of a professional masseur.

Many patients aggravate the tinnitus very much and worry themselves by dwelling on imaginary dangers and constantly directing their minds to the sounds. The cheerful assurance of the physician—and this can usually be given—that the tinnitus does not imply any brain affection or impending brain affection, nor does it mean danger to life, is very helpful. The patient should be enjoined, therefore, to try and withdraw his mind from the sounds, ignoring their existence as much as possible; even when cure cannot be promised, he should be encouraged to expect gradual mitigation as time goes on. No doubt the apparent mitigation is often the result of, as they say, "becoming accustomed to the sounds." As patients are often greatly excited over these sounds, when severe, a few words calculated to encourage and calm are therapeutic agents of no mean value.

Pneumatic Massage and Electricity.

Patients sometimes tell us that they find relief by pressing the tragus into the meatus with the finger, so as to cause a rapid in-and-out movement, producing alternate condensation and rarefaction of the air in the meatus, and so exposing the tympanum to rapid air vibration. The more effective employment of this to the extent of from a few hundred to 2,000 vibrations in the minute, by means of an electro-motor, is much practised in cases of middle-ear stiffenings and rigidities associated with tinnitus, and patients frequently express a distinct feeling of clearness and freedom from the tinnitus after from one to two minutes of its use. I generally adjust the piston for a stroke of $\frac{1}{4}$ in.; but, if the maximum speed is required the stroke is shortened to $\frac{1}{8}$ in. With long strokes there should be comparative slowness; with very short strokes, such as $\frac{1}{16}$ in., great rapidity is permissible. One disadvantage of the high speed of the piston, propelled by the electro-motor, is the noise produced by the machine, and a noiseless machine is a desideratum. The noise complicates matters and may sometimes prove injurious, and it is always unpleasant. There is a difference of opinion as to the duration of each séance of treatment and the frequency of repetition as well as the duration of the course. On these points I think further investigation is required. My own practice has been to continue it from one to one and a half minutes at each sitting, repeating the process twice a week, the duration of treatment being dependent on the results. Some Continental otologists, however, go the length of a thirty minutes' application, with daily repetitions. There is unfortunately a good deal of difference of opinion as to the value of this form of treatment. Some authorities have very little belief in its value. Undoubtedly we desiderate greater precision of knowledge as to the actual value of this remedy.

Lucae found that a striking influence is frequently exerted upon certain subjective sounds in the ear, mainly of a musical character, by bringing to bear upon them objective sounds coming from a tuning-fork, if these objective sounds be as far removed as possible in pitch from the subjective ones. This is the so-called *Tonbehandlung*. For example, if the sounds in the ear are high pitched, such as a hissing, a ringing, a whistling, a deep-toned tuning-fork (such as C or C_1) is employed; on the other hand, if the tinnitus be low pitched, such as a rushing, a buzzing, or a humming, then a tuning-fork of high pitch (such as C^3 or C^4) is used. The vibrating fork is applied either by placing the end of its handle into the external meatus or, in order to augment the sound, the vibrations are passed through a resonator which is fixed into the ear. The duration of the application may extend from one to five minutes, and, in order to ensure a continuous sound, the tuning-fork may be connected with a magneto-electric apparatus. I have frequently employed tuning-forks in this way, and have found in a certain number that a temporary respite from the tinnitus resulted, usually, however, only for a few minutes, but occasionally for several hours. Unfortunately, there has never been in my experience a permanent effect. *Tonbehandlung* is nevertheless an interesting experiment on lines which might conceivably, by further investigation, lead to more important effects.

The electrical treatment of tinnitus, which at one time was held in considerable estimation, is now, so far as I know, but little employed. There is not only scepticism as to its value, but fear that it may actually aggravate the symptom. Probably benefit may sometimes be derived from the action upon the muscles of the middle ear, especially by the Faradic current. We know the far-reaching influence of disturbance of the muscular apparatus of the Eustachian tube and tympanum, first upon the tension of the tympanic structures, and secondly upon the tension of the labyrinthine fluid. The more efficiently we act upon these tubal and tympanic muscles the more likely are we to secure good results, but no doubt here also the mental effect upon neurotic patients may be a factor. The apparently good effects from the high frequency currents which were reported at the Oxford meeting a few years ago do not seem to have been borne out by further experience, and this method seems to have passed into the oblivion which has been the fate of so many remedies for tinnitus.

I have not referred to the effects upon tinnitus of naso-pharyngeal treatment, as this scarcely belongs to my division of the subject. That the establishment of good nasal breathing and a healthy condition of the naso-pharyngeal spaces often leads to the disappearance or mitigation of a tinnitus is familiar to all of us. The removal of post-nasal adenoids, operations upon the intra-nasal structures, even upon the accessory sinuses of the nose, cauterization of hypertrophied tissue, medicated applications to the interior of the nose, may therefore be said to be included in the treatment of tinnitus and often very successful treatment. On the other hand, it must not be forgotten that tinnitus may be *caused* or *aggravated* as the result of injurious or unnecessary treatment of the naso-pharyngeal spaces.

Tinnitus of dental origin undoubtedly occasionally occurs, and, of course, the treatment here is very obvious.

In conclusion, I have to apologize for my rather commonplace remarks, but I do not suppose that you expected anything very fresh or new in connexion with the part of the subject allotted to me. After all, however, the somewhat formidable and difficult operations upon the labyrinth and auditory nerve, to be brought before you by Mr. Lake, will, even if proved to be successful, always be reserved for the very severe forms of tinnitus, especially those associated with vertigo. By far the largest number of persons suffering from tinnitus will have been treated, and will only permit themselves to be treated, by milder measures.

II.—Richard Lake, F.R.C.S.,
Surgeon, Royal Ear Hospital, London.

OPERATIVE TREATMENT OF TINNITUS.

The long list of remedies which you have heard from my esteemed *confrère*, Dr. Barr, will have shown that amongst otologists themselves there is a well recognized difficulty experienced in the treatment of noises in the ear and head or tinnitus. When I have also recalled to your remembrance the long tale of operative procedures, I think you will agree that though the end may not even be in sight, yet we are in many ways much nearer a successful finishing point.

Of the operations only those which are or have been employed for the relief of tinnitus with anything approaching frequency or which merit consideration for other reasons will be considered. Among them we must include intranasal operations, lumbar puncture and ligation of the carotid. Amongst intranasal operations we have

practically two which are of use. One is removal of enlarged posterior ends of the inferior turbinates and the other of serious spurs, by which I mean spurs of the vomer which touch or are adherent to the outer nasal wall. Tinnitus reflexly due to intranasal conditions is no doubt rare, but this cause is, I think, too often overlooked in the early stages when alone these intranasal procedures can have any effect. In all cases of tinnitus where we have good hearing and an absence of symptoms suggesting a central origin for the subjective sounds an intranasal examination ought to be made and the advisability of the correction of any deformities which are present considered.

The direct continuity of the line of thought will, I think, now take us to the Eustachian tube. And here it is to be considered possible that an obstruction to or a communication of irritation to the naso-pharyngeal extremity of the tube may be a potential cause of reflex tinnitus, and such causes if found should be relieved by operation if possible, whilst the employment of Eustachian bougies if the lumen of the tube is obstructed is of undoubted value. I have had several cases recently where a marked improvement or even a total suppression of a hissing tinnitus has followed a dilatation of a constricted tube.

Before entering into a consideration of the more direct operation we will take this opportunity of considering lumbar puncture. I do not myself feel strongly tempted to adopt it as a method of treating tinnitus, although Babinski and others speak well of it. Babinski, writing in 1904, after what one may term an unusually extensive experience, sums up his results as relief more or less complete in 30 cases out of 90. Now I am inclined to the belief that Babinski himself is not an aurist, also that a large number of the cases would have yielded to other treatment, nor must we forget to allow for the apparent fact that many cases were of a type showing nerve lesions—a point to be recalled later when considering complete removal of the cochlea and division of the nerve; as also that the fullest flow of cerebro-spinal fluid is quite incapable of influencing central tinnitus.

We are, I think, justified at all events in holding, as it were, a watching brief in this matter, not being in haste to condemn, and not rushing in to submit our patients to experimental puncture. Let us rather wait and see whether there is any really good evidence that a case or cases which have failed to yield to therapeutic remedies will yield to lumbar puncture. For my own part, I shall not employ it without conclusive proof of its efficacy. Whilst at the same time that we temporarily refuse to employ the remedy we must acknowledge with respect the power of reasoning which enabled Babinski to deduce the probable effect of his experiment, although it seems difficult to assume his whole line of argument, for the endolymphatic and perilymphatic spaces of the labyrinth are not in direct communication with the subarachnoid space, as one would imagine would be necessary for Babinski's procedure to have success, and one notes that the result is not immediate, always somewhat remote. This would lead to the consideration that it is not that the removal of the cerebro-spinal fluid acts as a direct influence upon the deep roots of nuclei in the auditory tract, but rather that it is the blood pressure which is affected by the puncture. This may well be as I suggest, for the tinnitus, for example, which is the outcome of an arterio-sclerosis of the vessels of the inner ear, is often modified or removed by remedies which reduce the arterial tension. From the possibility of this explanation alone I think we should wait before too enthusiastically accepting Babinski's clever method.

Reverting to earlier times, before intranasal and intra-tubal treatment were dreamt of, we arrive at the renaissance of otology, when the empiricism of aural treatment became less and the first dawn of rational ideas began to find a path through the darkness of ignorance. At this time, in our islands, Sir Charles Bell, Wilde, and Toynbee, with others on the Continent of Europe, commenced trephining the tympanic membrane for tinnitus as well as for deafness, and we must in deference to their skill and temerity repress the shudder as to the too probable results which occurred in those preantiseptic days, though, curiously enough, Sir Charles Bell does not allude to suppuration as resulting in any of his cases; still, as pus was then *bonum et laudabile* when of a rich cream-like consistency, our wonder need not be great. Time and experience, however, have led to our disagreeing with this as a method of treatment. As the science of otology developed and aurists became more and more specialists, division of the tensor tympani tendon and section of the posterior fold of the membrane were introduced, the latter, I believe, by Politzer. These two operations came to stay, but even now they are falling much into disuse, comparatively speaking, on account of our being so often able to obtain a similar effect by non-operative measures. And of the two, one would, I think, give the preference to multi-sections of the posterior fold; it is a very simple little procedure and devoid of risk, and requiring only a moderate amount of special training, far less than the operative procedures which come next on our list, working upwards in the scale of severity. Although the Continent of Europe was more directly instrumental in the introduction and perfection of these minor though delicate operative methods, especially Austria, France, Italy, and Germany, yet our Transatlantic cousins in the United States of America, as we shall see, formed apt pupils, who for a time outstripped Europe.

We have now to review a series of minor operations, consisting of removal of the malleus, of the incus, and of both these bones, with or without the tympanic membrane. No need to dwell upon technique I think; most, if not all, books upon diseases of the ear provide good descriptions of them. Personally neither these nor those operations which we shall deal with next appealed very strongly to my surgical sense, although I am ready to admit that at times the removal of the malleus or incus seemed to have done unquestionable good; but now the position is somewhat altered, and the removal of one or both the larger ossicles may be undertaken as a preliminary operation with a view of staving off one of greater magnitude.

Its failure would do no harm, but I would not, I think, advise these smaller operations unless there was some hearing power to conserve. The idea underlying all minor intra-aural operations is that by their means any abnormal pressure on the fluids of the labyrinth is lessened or removed; this, of course, presupposes that the stapes is able to move more or less relative to its normal mobility. Now this again introduces a question of some moment—namely, Is stapedial pressure a cause of tinnitus? When testing the mobility by means of Gellé's test, or, in other words, by a temporary increase of air pressure in the meatus and thence to the labyrinth, has one ever had a patient complain of tinnitus? In my experience, No. Of vertigo? Yes. It is true that great pressure in a caisson, with an obstruction of the Eustachian tube, may provoke tinnitus, but that is, I think quite on a parallel with the pathological state of an ear with a gradual or even a sudden tinnitus, and is due to other causes besides that of stapedial pressure. And again, unless the stapes is mobile, the operation cannot do good unless in some occult, or, more correctly speaking, unseen way. So we may say all genuine bony fixations of the stapes in its niche are absolute contraindications to the proposal of any intra-meatal or intra-aural operative interference.

The lesser operative procedures found the zenith of their popularity in America from 1888 to 1898, and received there their chief impetus from the enthusiastic work of Jack, Burnet, Alderton, Chevalier Jackson, amongst others; but in America, as elsewhere, a reaction seems to have set in; at all events, they are much less often heard of. The particular operation which was and always will be associated with the name of Jack is that of removal of the stapes, hence developed or modified into mobilization of this ossicle. In the majority of cases the stapes is easily brought into view by means of a flap, with its base below, which embraces the upper and posterior segment of the drum. For the description of this operation also the textbooks and monographs by Jack and other American authorities may be consulted. These are details—important details, truly—but not of interest when time is so short. The results of stapedectomy are, however, not all that were hoped for; and, indeed, one finds a curious example amongst the successful results as to tinnitus—namely, in the case in point the footplate was firmly ankylosed. Now, if the removal or no of the footplate can in this operation be immaterial, then the operation is one of unnecessary severity and difficulty, and also possesses the additional demerit of

leaving open an easy path for intracranial infection should the operation field become infected.

Following the foregoing we may next proceed to the experimental opening of the labyrinth. One may class these as entrance through the oval window after removal of the whole of the stapes, perforation of an ankylosed footplate via the round window, and trephining the cochlea. The operation of entry via the oval window was performed by Orme Green in 1885, unfortunately without benefit. I mention this as not only was this well-known aurist nearly fifteen years before everyone else, but also, as no report of the operation could be traced, I wrote and obtained a most courteous letter from that gentleman with details as far as his memory served; briefly, it consisted, after the preliminary removal of the stapes, in the passing into the osseous vestibule of a fine curette or probe and breaking up the membranous labyrinth towards the cochlea. This brilliant pioneer work never attracted any attention, and missed the recognition it deserved at the hands of the profession.

Unfortunately, success in all these four variants of the perforation of the labyrinth is only occasional, but it is only fit that we acknowledge Botey of Barcelona as the originator of the entry via the round window, a more probable way of obtaining a flow of labyrinthine fluid from the cochlea than the other two. Unfortunately, these methods must, to be successful, presuppose a tendency to a superabundance of intralabyrinthine fluids. This we know now not always to be the case, at all events in arterio-sclerosis.

Trephining the Cochlea.—This operation is one which can be performed without a preliminary mastoid operation, and is, of course, of such a special nature that very great skill is required. It is far better to do a radical mastoid operation, however, as the extreme density of the bone really demands that a protector of some sort be employed to prevent a side-slip of the burr or trephine, for there are important structures in the immediate vicinity, each protected by only a thin plate of bone, and at times these bony plates are absent. Above lies the facial nerve and below lies the jugular bulb, neither of which is it desirable to injure. This operation has proved successful, and does not of necessity destroy the hearing, but the only time I employed it was without result, and, as with the previous operations, it presupposes an excess of intralabyrinthine fluid, and as a result a want of success must often occur.

At this time I shall, as we leave the lesser operations, those almost without risk to life, discuss the first of the three major undertakings, that of ligation of the carotid artery. This operation seems to me to be quite indefensible, the underlying idea being, I presume, to cut off the blood supply to the ear, but surely since the time of Wilks and his circle no one could expect to cut off any part or portion of the brain or its appendages by ligation of one source of supply. Temporary compression of the carotid leads to temporary anaemia of that side of the cranial contents, including the internal ear, with very uncomfortable sensations, I believe; one may, I think, dismiss this as one of those operations that would be undertaken more fittingly in an experimental laboratory, if undertaken at all.

I think our next consideration should be that of total ablation of the cochlea. Now, it happens that I am able to find very few records of cases in which this, to me, most logical operation has been done. I say logical, for it leaves nothing further to do, it attacks and removes the whole of the endorgan of the cochlear division of the eighth nerve—that is, the auditory part; and although it opens the skull, the opening is very small, and also the outrush of cerebro-spinal fluid is of itself protective.

Again, to be brief as to operation details, what is done is after a preliminary radical mastoid operation with a sufficiently wide removal of bone to allow a free view of the deep parts, especially the inner wall of the middle ear. The promontory is cut away with a chisel or curved gouge and the whole of the roof of the cochlea removed; the modiolus is then seen as a tiny projection, and is cut off with a sharp tap of the mallet, using a narrow chisel. Cerebro-spinal fluid now flows freely, but a small plug of sterilized wax will immediately plug the orifice through which it escapes. My first case was in 1904, and I thought it had failed, but much to my relief it has proved quite successful. Murison and Yearsley both succeeded with a case each. Since then I have operated without success in the case of a lady who was threatening suicide, and who had no aërial sound conduction at all on the side affected. Not only was the operation a failure but the patient carried out her threat. I have no doubt there are more instances than these, but three successes out of four operations gives, I believe, a happy augury for properly selected cases.

Now, beyond what I have said about the operation itself there is another point not devoid of interest—namely, the flow of cerebro-spinal fluid. In my second case I allowed this to continue for three days, and most profuse it was. My reason was twofold. If lumbar puncture acted on the central nuclei a good flow might do much to quiet the tinnitus; and, besides, it was possible that a beneficial influence might be exerted on the suicidal tendency. However, it did neither, and I was obliged by the cutaneous irritation to close the opening. Of course, in suppurative labyrinthine operations the cochlea is often ablated, and correctly so, but when I referred to but a few cases I alluded to those operations which were done for tinnitus alone.

We come now to the last and most controversial operation, that of division of the auditory nerve. This of necessity involves opening the cranial cavity at or near its base, with the attendant inconvenience of a profuse flow of cerebro-spinal fluid relatively early in the operation.

There is a fairly large number on record, and there are several different methods, and were the cochlea less easily accessible, or were the operation on the cochlea of equal magnitude and possessing the same danger and risk to the patient, then I think there would be less against division of the nerve within the skull.

So far I have been able to find the following cases:

Krause	...	1	...	Death.
Parry	...	1	...	Failure.
Wallace	...	1	...	Death.
Armour	...	1	...	Successful.
Milligan	...	2	...	{ Successful. { Death.
Lannois	...	1	...	(?).
Ballance	...	1	...	Failure; died one year later.
		8		

Deaths 3, failures 2, success 2.

These figures are not very alluring to me, that may be because I view this matter from a different standpoint from that held by those who advocate it. Be that as it may, it cannot be too strongly impressed upon the profession at large that tinnitus is not of necessity due to peripheral changes, and that if it is central, as was for instance Ballance's case, no possible operation can avail the patient. My contention is, however, still stronger; I do not believe that it *ever* ought to be done.

I have now run the gamut of operations for the relief of tinnitus, and for my own part consider that, after excluding for the moment removal of the malleus or incus, the operation which will afford the best result with the least risk to the patient is removal of the end-organ or cochlea. Now it is not only voices which represent the subjective noises of a central lesion; it is sometimes quite other sounds. But aural lesions seem to be confined to hissing, pulsatory, and less often high-pitched and long-sustained musical notes. So when we deal with such sounds we are able, failing relief from internal medication, to offer when fair hearing is present, and a careful dilatation of the Eustachian tube has also failed to do good, the removal of the malleus or incus; if this fails, or especially if the ear is of small value, we can offer an operation which even if it fail has put the patient to no serious risk.

DISCUSSION.

Dr. Knowles Renshaw (Manchester) said he thought all aural surgeons would agree that of the many forms of tinnitus, that arising secondarily to chronic middle-ear disease was clinically by far the most frequent, and therefore of the greatest practical importance. The cases in which tinnitus was most frequent were those of chronic non-suppurative catarrh (adhesive catarrh) and in those patients who had suffered from a past suppurative inflammation,

the consequences of which remained in a more or less disorganized condition of the middle ear, with cicatricial adhesions between the ossicles and the remnants of the tympanic membrane, or the walls of the cavity. In both classes of case the tinnitus was at first comparatively slight and intermittent, but tended to become more persistent and more severe, until in patients of a neurotic disposition it was sometimes intolerable. It was only in the later and more severe cases, as a rule, that the tinnitus took on a pulsating character. As a preliminary to any direct treatment, obviously every effort must be made to bring the ear and allied organs into as healthy a condition as possible, and with that object in view all obstructions in the nasal passages must be removed and all unhealthy conditions in the naso-pharynx dealt with and the Eustachian tube restored to health and patency if possible. When they considered the question of direct treatment it was important to ask how the tinnitus was caused. It was suggested that it was due to increased tension in the labyrinth irritating the nerve terminals, and that this increased tension was due either to the footplate of the stapes being forced inwards by contracting adhesions, or to interference with the lymph circulation by the cicatricial tissue causing in some way an obstruction to the natural drainage of the labyrinth. If either theory was correct, it was clear in those cases that the adhesions in the middle ear were indirectly the cause of the tinnitus, and that anything which would relieve them would probably act in a beneficial manner as regards the tinnitus. It would naturally be supposed, therefore, that oto-massage, which was almost always used for stretching the adhesions and relieving the deafness in those cases, would also have a beneficial effect upon the tinnitus. And it was found that for a variable time after the application of the oto-masseur relief of the tinnitus was experienced. It was, however, temporary, lasting rarely more than a few days, and in sadly too many cases only for a few minutes. The relief was generally greatest in the post-suppurative cases, but even in those the effect was comparatively short and often disappointing. He was led by these considerations, a little time since, to give a trial to the various solutions and combinations of thiosinamine, for which, when introduced subcutaneously, the power of softening cicatricial fibrous tissue had been claimed. Urbantschitsch claimed that fibrolysin (15 per cent. thiosinamine and sodium salicylate) had a decided effect upon otitic adhesions, and that in almost all such cases an improvement in the hearing was experienced. Dr. Renshaw commenced to treat cases by subcutaneous injection in the forearm of 5 per cent. aqueous solution of thiosinamine, and gradually increased the dose from 10 to 35 minims twice a week. An aqueous solution of 10 per cent. thiosinamine and 20 per cent glycerine was then substituted, and again the dose increased gradually to 35 minims; with the latter solution there was a slight transient burning sensation. In several cases he had also used fibrolysin. So far as hearing power was concerned it would at present be premature to make any claim, as it appeared to him that it would be necessary to observe a large number of cases over a considerable period before any definite statement could be made. In every case which had suffered from tinnitus there had been a marked improvement, however, so far as the tinnitus was concerned. In all those cases the tinnitus disappeared soon after the injections were commenced, and only in one case had there been any return. That was a severe case, and there was a recurrence of mild intermittent tinnitus when the injections had been suspended for a month. He could not make any statement as yet as to the permanence of the result, but he was of opinion that that method of treatment should be given a fair trial in all cases of cicatricial adhesions in the middle ear in which the patient suffered from tinnitus. He thought arterio-sclerosis or recent suppuration contraindicated the injection of fibrolysin. He had not yet seen any recurrence of suppuration during the treatment by injection of thiosinamine, but it certainly caused some hyperaemia of the cicatricial bands in the ear, and should therefore only be used when there was no active inflammation.

Dr. StClair Thomson (President) asked Dr. Renshaw the number of cases in which he had tried his injections, and he replied that it was about twenty of chronic middle-ear disease, of which twelve were suffering from tinnitus aurium, and that they had all been relieved.

Dr. Andrew Wylie (London) said that tinnitus seemed to him nearly an incurable complaint, and it perhaps seemed a utopian idea to cure it, but they could relieve it. He had found calomel of great service if given continuously nearly every second night, say in small doses, $\frac{1}{10}$ or $\frac{1}{20}$ grain. He had also experimented for some time with the hot air treatment blown into the middle ear through the Eustachian catheter. It could be done by means of a dentist's electric drying syringe, but that did not inflate the ear properly. He had, therefore, got an instrument made, a cylinder covered with asbestos, through which air could be driven by means of a foot pump. The air was heated by an electric lamp, and purified by means of glycerine, and the temperature regulated by a thermometer. A disadvantage was the extreme heat of the catheter. He showed a diagram of his instrument.

Mr. Oliver Carlyle (Edinburgh) asked if Dr. Renshaw could tell the meeting anything about the method of action of fibrolysin in tinnitus aurium. A good many suggestions had recently been given, but none of them were very satisfactory. He also said that Dr. Barr had not mentioned the mercurial treatment of tinnitus. It was usually given in the form of the perchloride in small doses over a long period. The results so far were promising.

Dr. Wm. Hill (London) thought that Dr. Lake had fairly summed up the operative position. He himself had never opened the labyrinth for relief of tinnitus, because in two of his cases the cochlea had been exfoliated, and the tinnitus had not been relieved. Of course the tinnitus may have been constant, and then the absence of the cochlea could not cure the trouble. In such cases division of the nerve would be useless, for after all the auditory nerve and its prolongation practically extended to the auditory centre.

Mr. Ward Cousins (Southsea) said that tinnitus was a distressing symptom in many forms of aural disease, and the different kinds of noise were often regarded as valuable aids in diagnosis, provided reliance could be placed upon the intelligence and observation of the patients. The auditory nerve could be abnormally excited by many disturbances within, and also by many disorders outside the organ. Tinnitus occurred sometimes in anaemia, and in connexion with vascular changes and loss of blood. One variety of tinnitus was of special diagnostic importance, and that was styled intermittent and pulsating. In acute and chronic middle-ear disease there was often increased bone conduction of sound, an indication of vascular congestion and tension within the organ, and the sounds were also magnified in the recumbent position by resonance and reflection of the vibrations. In acute disturbance tinnitus of this description was often attended with distressing pain. Pulsating noises were sometimes associated with serious intercranial disease or even aneurysm of the great vessels of the head and neck. When pulsating tinnitus was persistent, auscultation over the neck and temporal regions might assist the diagnosis, which would be soon confirmed by the presence of cerebral symptoms and optic neuritis. In many cases of marked defective hearing it was a question whether the pulsation was produced in the middle or internal ear. Now pressure on the common carotid artery in the neck was said by some surgeons to arrest at once the throbbing if it was the result of disorder in the external or middle ear. On the other hand, when the pulsation was excited by disease within the labyrinth, pressure on the vertebral arteries applied in the hollow behind and below the mastoid processes would reduce the abnormal sensations. In his own practice he had frequently tested the value of these tests, but he felt bound to state that they had not proved of much assistance. Tinnitus aurium arising from disorders of the external meatus could at all times be relieved by ordinary treatment. Foreign bodies, especially after prolonged impaction, would cause noise and great uneasiness. On one occasion he removed a cherry stone which had been in the meatus for seventeen years. In all cases of

this kind the syringe must be used with great discretion. He had often known violent syringing cause prolonged tinnitus. In middle-ear diseases a good result could often be obtained by treatment. Noise was the result of tension and then pressure upon the stapes caused by chronic changes in the tympanum and adhesion of the ossicles. It occurred, too, in connexion with obstruction of the Eustachian tube and chronic disorders of the naso-pharynx. In these cases the hearing power was diminished and often variable, and the membrane was retracted with marked prominence of the handle of the malleus. Some aurists had described spasm of the tympanic muscles as a frequent cause of tinnitus, but it appeared to him that the tensor tympani had especially to do with the regulation of the air which entered the tympanic cavity in swallowing, and very little with the functions of the nervous apparatus. In middle-ear tinnitus alternate injection and evacuation of air was sometimes very useful, but the little operation required care. It often aided by keeping open the tubes and increasing the pliancy of the bony chain. He had found patients relieved by the injection of air containing the vapour of chloroform mixed with a solution of menthol in spirit. Sometimes daily massage behind the head and ears after the light application of a stimulating lotion was very serviceable. Patients suffering from aural trouble should avoid all excitement of the nervous system and mental strain, and take complete rest and change before the disturbance became hopelessly chronic, and give up all stimulants and smoking. Tinnitus in its most severe form was dependent upon a disordered condition of the auditory nerve associated with excessive sensibility of the whole nervous apparatus. This hidden and mysterious organ might be the seat of gouty, rheumatic, or syphilitic changes, which often required prolonged specific treatment, and careful protection against exposure and excessive vibration. Severe tinnitus was sometimes the sequel of chronic middle-ear disease, but to this there were many exceptions, and a progressive loss of hearing power attended with persistent aural vibration occurred without any marked incipient symptoms or functional disturbance. There was undoubtedly a peculiar individual sensitiveness to persistent noise. Some people worked for years in factories without any inconvenience or aural trouble, while others got slowly deaf and suffered from distressing tinnitus; and whenever this was the case the only remedy was to give up at once working in such irritating surroundings. In cases of obstinate tinnitus the actual condition of the labyrinth was very difficult to decipher. There was often a feeling of tension in the ear, which had been theoretically associated with effusion around the special nervous structures. Patients suffered from a gradual loss of hearing power, and complained of an uneasy sensation of fullness in the external meatus; at the same time they could detect a dullness in the sense of touch around the auricle. The noise generally varied in intensity, and often caused great discomfort. Any sharp sound or movement appeared to aggravate the distress. Some patients exhibited a slight tendency to stagger, and had a feeling of giddiness in inflating the tympanum or blowing the nose. Others were unable to distinguish the direction of sound, and once a musician came to him greatly alarmed because he failed to recognize false notes when they were played. As regards treatment—absolute rest, bromides, hydrobromic acid, injections of pilocarpine, iodides and a milk diet, and the constant current might give relief; but in many chronic cases tinnitus aurium was incurable. This severe form of the disease often produced extreme mental depression, and patients had told him that they would rather permanently lose all hearing power than continue to suffer such uncontrollable confusion, and one patient committed suicide. In such cases the recent improvements in aural and inter-cranial surgery led them to anticipate the development of new methods for its relief. It was certain that considerable benefit had in some cases been obtained by the removal of adhesions and ossicles, and the complete clearing out of the diseased tympanic cavity. The radical operation of opening up the labyrinth, and the complete excision of the nervous structures could be practised without much risk. Some patients, he felt sure, would not mind some loss of power about the face, and permanent deafness, if they could be delivered from the misery of aural noise and confusion. In his experience, tinnitus was far more distracting and depressing to educated persons, who were compelled to exercise concentrated attention and intellectual effort, than it was to sufferers of a different class who followed occupations which required only ordinary labour and manual dexterity.

Mr. R. Woods (Dublin) said that in reasoning with regard to the causes of tinnitus aurium it was important that they should make sure that the physical theories on which they based their arguments were well grounded. One assumption—and a very important one—which was very frequently made was that the foot of the stapes was capable of causing a permanent rise in labyrinthine pressure. He had the greatest difficulty in subscribing to this view. No doubt a temporary rise in labyrinthine pressure followed the inward excursion of the stapes, but that this continued for any considerable time was unbelievable. There were so many small openings through which the fluid could escape from the labyrinth both along vessels and nerves that any pressure over and above the normal must before long relieve itself.

Dr. Logan Turner (Edinburgh) asked if the selective action of fibrolysin when administered by subcutaneous injection had been proved. He himself doubted it. He thought that the introduction of fibrolysin directly into the tympanum in post-suppurative cases of middle-ear disease might prove of some benefit to the ear condition. He would like the previous history of Dr. Renshaw's cases. It was possible that some chronic gastric ulcer, for example, might have been relieved by the fibrolysin. He agreed with Dr. Woods's remarks.

Dr. Delavan (New York) commended the wisdom of the Council in bringing up for discussion the much-neglected subject of tinnitus. Of late years undue attention had been given to the major operations of otology, while tinnitus, a most common and most distressing condition, had received comparatively little attention. Our knowledge of it and of its treatment had not been greatly advanced, and, as had been shown by the readers of the excellent papers to which they had just listened, the majority of the best of the methods of relief suggested had proved of uncertain value. He expressed the hope that the papers and the valuable discussion which had followed them would excite a livelier interest in this very important subject.

The President said that with reference to treatment by hot air, he mentioned that he had the other day written to Dr. Bourgeois, Professor Lermoyez's assistant, asking their present opinion of hot-air treatment in nasal cases, and had received in reply their opinion that it was not thought so much of as formerly, and that any good results were considered to have been rather due to suggestion.

Dr. Barr, in reply, referred first to the operative treatment described by Mr. Lake, which he trusted would produce better results than he had obtained by medicinal treatment. He referred to a case of pulsating tinnitus in which the patient had discovered that the condition was improved by pressure over the mastoid. The posterior auricular artery was thereupon ligatured, but without effect. Then the external carotid was tied, when the tinnitus gradually became less, and finally disappeared in a few weeks. This result was certainly peculiar. Vertigo was apparently more relieved than tinnitus in labyrinth operations, possibly because it was easier to remove the semicircular canals than the nervous apparatus. He approved of Dr. Logan Turner's suggestion that fibrolysin might result in improvement in tinnitus indirectly through its action on some part of the body remote from the ear, rather than upon any selective action upon the organ of hearing itself. It was unfortunate that it was such an expensive remedy, for he did not know of any other of which it could be said that it always gave relief. Nothing had been said about *Ton-behandlung*, and upon these lines there should be further investigation.

Mr. Lake, in replying, said that he had been interested in hearing Mr. Ward Cousins speak of his want of success in removal of the ossicles, as it bore out his own ideas.

He was most pleased to hear the strong way in which Mr. Woods spoke about the assumption of permanent increase of intralabyrinth pressure. There was a very important point with reference to the removal of the cochlea, which was that the modiolus must not be left behind. It could be removed with one tap of the chisel. In cases of otosclerosis with tinnitus Reisner's membrane fell down and the whole of the cochlear canal was empty of fluid, so that if endolymph was necessary for the production of tinnitus they ought not to get this symptom in otosclerosis. The source of the noise was, then, probably in the ganglion cells. In Mr. Hill's cases the membranous cochlea and end-organ would be left behind. The modiolus must be also removed. It was simply done and without danger to the facial nerve, which was above the area of operation.

PRELIMINARY OBSERVATIONS ON THE ASSOCIATION OF SLIGHT ABNORMALITIES OF THE AURICLE WITH CERTAIN FORMS OF DEAFNESS.

By Hugh E. Jones,

Honorary Surgeon, Liverpool Eye and Ear Infirmary; Ophthalmic and Aural Surgeon, Wigan Infirmary and St. Helens Hospital.

Observation of ear patients, both in hospital and in private, shows that a large proportion of the cases have some deviation of the auricle from the accepted normal. These deviations consist chiefly in the smallness or absence of the lobule, attachment of the lobule along its anterior border to the cheek, and other abnormalities of the lobule with or without defects in the helix or faulty position of the whole auricle.

These defects are those usually associated by authors with degeneracy, and are said to be common in persons with vicious or criminal tendencies.

The writer thinks that in ordinary members of society the attachment or absence of the lobule is associated with a refined, highly-strung and somewhat introspective temperament. Many of the subjects are intellectual persons who are subject to fits of abstraction.

Analysis of cases shows that these auricular defects are most commonly present in the non-accidental diseases of the ear—that is to say, the diseases which are not due to acute inflammations, exanthemata, etc—but it has been found impossible so far to associate them *specially* with any particular form of chronic non-inflammatory disease.

They are frequently associated with imperfect development of the palate and naso-pharynx, and probably with slight structural defects of the Eustachian tube and tympanum.

The writer finds that such cases are very often diagnosed as "post-nasal adenoids," and operated upon for that condition, often without any beneficial result. He thinks that when all ordinary causes of deafness are excluded and possibly removed, there remains in these an unexplained residuum of deafness. This residuum of deafness does not give regularly definite reactions of chronic dry catarrh, otosclerosis, or nerve deafness. Sometimes one, sometimes another, type of reaction predominates; often one finds it impossible to say which, and one falls back upon the diagnosis of psychical or functional deafness.

It will be obvious that if these observations can be substantiated by further investigation and statistics they should have an important bearing upon the treatment, especially in respect of supposed post-nasal adenoids, and the prognosis of a large class of diseases of the ear.

To this end are required statistics of the proportion of defective auricles to normal auricles in persons who are not supposed to be deaf, and the proportion in this class of those who are more or less psychically deaf; the true proportion of defective auricles in the degenerate; of deafness in the degenerate; and finally a careful analysis of the causes of deafness in large numbers of the patients who show auricular defects.

The annexed table forms a very small contribution to the statistics. The numbers are small simply because in a crowded out-patient department it is difficult to give personal attention to consecutive cases. The cases in the table are consecutive in so far as *all* the new cases (and only new cases) on certain days were included, though the days were not consecutive days. The attached lobules are subdivided into "obtusely attached," "attached"—because no further particulars were given—"square," that is, where the lower straight border of the lobule joined the cheek at right angles, and "acute," where there was a small kink at the junction. It will be noticed that in the first group of cases there is a marked preponderance of "good" lobules, while in chronic tympanic catarrh, otosclerosis, and the nerve group, there is an enormous preponderance of "attached" lobules.

Cases Noted, 230. Attached Lobules, etc., 149 = 64.78 per cent.; Free Lobules, 81 = 35.22 per cent.

	Obtuse.	Attached.	Square.	Acute.	Total.	Good.
Cerumen	2	4	5	1	12	20
Adenoids and tonsils	2	1	6	0	9	13
Nasal diseases	0	0	0	0	0	3
Eustachian obstruction	0	1	0	1	2	2
					23	38
Chronic tympanic catarrh	10	8	6	2	26	7
Otosclerosis	7	11	1	2	21	2
					47	9
Suppurative otitis media	13	9	5	4	31	22
Nerve deafness	2	7	2	2	13	3
Functional	0	4	0	0	4	0
Hysteria	2	0	0	0	2	0
Deafmutism	0	0	1	0	1	0
					20	3
Hereditary syphilis	0	3	0	0	3	3
Otalgia	1	1	0	0	2	0
Residual suppurative otitis media	4	1	1	0	6	0
Wound of meatus	1	0	0	0	1	0
Otitis externa	0	2	0	0	2	0
					14	3

DISCUSSION.

Mr. Lake and Dr. Jackson complimented the author of the paper upon his energy in the collection of statistics, and Dr. Dan McKenzie (London) pointed out the possible errors and difficulties in the way of all statistic gathering, and the necessity for control inquiries amongst healthy individuals. Mr. Jones, in replying, said that he was aware of these dangers, and that he had brought forward his cases rather as a stimulus to otologists to gather further statistics upon similar lines than to deduce anything definite from his collection.

THE ETIOLOGY OF EXOSTOSES OF THE EXTERNAL AUDITORY MEATUS.

By George Jackson, F.R.C.S.Eng.,

Honorary Surgeon, Devon and Cornwall Ear and Throat Hospital.

Exostoses of the external meatus may be classified into three groups, namely: (1) Those which entirely block the external auditory meatus; (2) those which do so partially; (3) those which scarcely affect it, but merely cause some narrowing of the meatus.

Exostoses in this region are generally sessile, but occasionally are attached by a very narrow pedicle. It was so attached in the following case, that of a patient sent to me by Dr. Abbott, of Roche, Cornwall:

The patient is about 18 years of age, and by occupation a pianoforte tuner. He noticed he was getting deaf for three or

four weeks, and then consulted Dr. Abbott, who found him almost absolutely deaf on the right side, with a bony growth occupying the meatus. There was no history of previous discharge, or any cause, such as a blow or sea-bathing.

State on Examination.—There was an oval body lying across the meatus a little anterior to the junction of the cartilaginous and the osseous portion of the canal, which it completely occluded, and was attached to the anterior wall by a pedicle. It was not possible to pass a fine probe between it and the posterior wall. The bone conduction of sound, as tested by the tuning-fork on the mastoid, was normal, but the aërial hearing power was about one-twentieth of normal.

Operation and Result.—I removed the growth with very little difficulty, using a small chisel and mallet. The specimen, which has shrunk considerably, and of which I can only show you a half, as unfortunately the other half got destroyed in the attempt to prepare it for a microscopic section, is of a cancellous nature. On removal it measured ½ in. in length and ¼ in. in breadth. When I was able to inspect the membrana tympani it was somewhat damaged by pressure and retracted, especially in the inferior segment which was perforated. When I saw him about a month afterwards the hearing had improved to about half of normal.

When these growths are sessile and do not interfere materially with either the passage of sound waves or of free drainage—when discharge is present—they may be considered a negligible quantity. Exostoses of the external meatus are not very common. Out of 3,000 cases of ear disease registered in the reports of the Devon and Cornwall Ear and Throat Hospital, only 11 cases have been recorded, and apparently only 2 of these required operation—one to which I have referred, in which hearing was materially interfered with, and one to facilitate treatment of and allow free drainage of discharge.

The etiology of these growths is very undetermined. The comparatively few cases which have been observed render it difficult to arrive at any definite conclusions. They have been attributed to various constitutional causes, such as rheumatism, gout, and syphilis. With regard to gout, the deposits—when they occur—are of a calcareous nature, and syphilis, so far as I have been able to ascertain, may be excluded.

Through the courtesy of Professor Keith, the Hunterian Curator of the Royal College of Surgeons, I have been enabled to examine all the skulls in the collection in which the presence of exostoses were noted. The skulls in which they have been found have come from—in the majority of cases, so far as I have been able to ascertain—places near the sea. In twelve cases the specimens came from Peru, principally from Pasamayo. In the map I have been able to consult I have not been able to find the place, nor of Pisaqua, where two specimens were found. The skulls from that place were flattened posteriorly and elongated, and the growths cancellous. As Peru has—or had—a seaboard of at least 700 miles, it is reasonable to suppose that many of the inhabitants dwelt in the immediate neighbourhood of the sea.

Four specimens came from the Chatham Islands—one from the Isle of Pines, New Caledonia; two from the Fijian group. In one of these there were three exostoses—a large one on the posterior wall, and two smaller ones on the anterior, spherical in shape, and meeting one another. I may mention here that that is the form described in some textbooks as being the ordinary form. One skull came from New South Wales, Australia. Two specimens were from North America. One of these from the West Coast—Columbia river—and another from Middle Tennessee. In this case the growth was extremely hard, resembling ivory in consistence. The skull was flattened at the occiput.

There are in the Museum 450 skulls from North and South America; 25 have exostoses. No exostoses have been noted in any of the skulls from other places. In the Museum Catalogue for 1907, 1,312 skulls are described. Some authorities state that 25 per cent. of the skulls found in the prehistoric mounds in North America contain exostoses, and this has been attributed to the flattening process the skulls have undergone during the infancy of their owners. Only 4 out of the 25 I examined had flattened skulls, and these were all from Peru and North America. None of those from the South Seas were flattened or deformed in any way.

As to the character of the growths, the majority were of cancellous structure and occupying the lumen of the meatus in its longitudinal axis, and generally on the anterior and posterior walls. Those from the Chatham Islands were all (4 in number) spherical and of ivory-like consistence, as also was the one from Middle Tennessee—North America—so that only one-fifth of the number examined were ivory-like; out of the entire number examined, in only about three or four cases were they decidedly pedunculated. In the majority of cases they were quite sessile. Except in one case, and that somewhat doubtful, there did not appear to be any evidence of any other diseased condition, certainly nothing of a syphilitic character.

Bacon, in his *Manual of Otology*, says that he has seen many cases in which white nodules were situated on the walls of the canal close to Shrapnell's membrane. I noted several papillae-like growths in one specimen from Pasamayo. Koerner has found 147 cases—114 males and 33 women—and says that those living by the sea are more affected than those living inland. They are more frequent in England than on the Continent. This statement rather lends itself to the view that the irritation caused by salt water is at any rate a more frequent cause than any other. Some authorities also state that it may be due to chronic periosteal inflammation of the bony canal due to fracture or resulting from chronic suppurative otitis media.

In one of the few cases which I have seen and operated on personally this may have been the case, as chronic otitis media had existed for many years, the difficulty of effectually treating it being the main reason for the removal of the growth. The patient himself attributed the disease to having been kicked repeatedly on the ear when a lad. It may be mentioned that he was a fisherman, and so brought a great deal into contact with salt water.

Von Trolsch, as quoted by St. John Roosa in his treatise on diseases of the ear, quotes quite a number of cases as being apparently connected with chronic otitis media, in one of which, in which the growths were not removed, death was caused by inflammation of the membranes of the brain, induced by suppuration in the cavity of the tympanum, the pus not being able to find an outlet owing to the presence of exostoses.

In the few scattered observations I have had the honour to bring under the notice of the Section I have endeavoured to show that the growths in question are generally cancellous in structure, and when their removal is necessary this may easily be done with a small chisel and mallet; that they should be removed when they form an obstacle to treatment of discharges from the ear, or when they materially interfere with sound conduction, otherwise they may be neglected. When the growth is of ivory-like consistence the removal is sometimes difficult, and probably drilling through the obstacle with a well-tempered dentist drill is the safest mode of treatment. Painting with iodine or the use of laminaria tents is to be deprecated; the former is absolutely useless and the latter is of doubtful advantage, and in addition to that is very painful and tedious. I think also the balance of evidence as to the causes of the growths is in favour of local irritation, principally of sea-water, and in some cases by the discharges of chronic otitis media.

DISCUSSION.

Mr. JONES (Liverpool) referred to a case operated upon by him which was bilateral, and in which he had not obtained any improvement in either ear. In both ears it was very difficult to get down to the position of the membrane, and in the right ear he never saw it all, but left a ring of bony tissue all round external to its position. It healed up, and a diaphragm formed external to the membrane. In the left ear he unfortunately damaged the facial nerve, and could not tell whether he was dealing with the promontory or an extension of the exostosis.

Mr. JACKSON, in reply to Mr. BARWELL, said that the majority of the cases came from people who were exposed to salt water.

A CASE OF EXTIRPATION OF THE LARYNX FITTED WITH A NEW VOCALIZING APPARATUS.

By R. H. WOODS, M.B.Dubl., F.R.C.S.I.,

Surgeon, Throat, Nose, and Ear Department, Sir Patrick Dun's Hospital, Dublin.

THE patient in the following case, a coal porter, aged 42, came to the out-patient department of Sir P. Dun's Hospital in January, 1909, complaining of cough and pain in swallowing. The pain radiated towards the right ear.

State on Examination.—The right side of the larynx was seen to be occupied by a large tumour involving the right side of the pharynx laterally, and reaching on its inner aspect somewhat beyond the middle of the interarytenoid fold. The tumour more than half filled the cavity of the larynx, but there was no dyspnoea. A piece removed for microscopic examination proved the growth to be a squamous epithelioma. The glands of the anterior triangle of the neck on the right side were palpably enlarged.

Operation and Result.—On February 2nd the glands of the right anterior triangle were removed, together with about 3 in. of the internal jugular vein, to which some of them were adherent. The patient for the next day or two had about three degrees of fever, though the wound pursued an absolutely aseptic course. The operation for the primary disease was performed seven days after that for the removal of the glands.

With a view to minimizing the septic inflammation that necessarily follows extensive operations on the larynx, the patient was given an injection of ½ c.cm. of *Staphylococcus aureus* vaccine two days before the second operation. This had the effect of raising his opsonic index for that organism from 0.8 to 1.2. On opening the larynx it was found that nothing short of total extirpation would meet the requirements of the case; this was accordingly carried out, the trachea being severed just below the cricoid and the larynx dissected out from below upwards. The trachea was next sutured to the skin at the suprasternal notch, the posterior wall being brought forward in the form of a cowl. The cut edges of the pharynx and gullet were then stitched together in the middle line, so as to cut off the food passage from the wound in front. The main wound cavity was plugged with iodoform gauze. In this way the air passage was shut off from all communication with the mouth in accordance with latter-day practice. A tube was passed into the stomach through the nose for feeding purposes, and was kept there for about a month.

The patient's recovery was uneventful. On the second day after operation his temperature rose to 100.5° F., after which it subsided to normal. As a protection against a possible attack of pneumonia he was given an injection of pneumococcus vaccine between two and three weeks after the second operation.

The difficulty of providing patients in his condition with means of articulation is very great, and the device employed by me in this case is my reason for showing the patient at this meeting. Professor Glück of Berlin carries a tube from the trachea, which, when held in front of the patient's mouth, reinforces the resonance of that cavity, especially for vowel sounds, in such a way that by listening carefully one is often able to understand what the patient is attempting to say. I have simply carried this tube a little further, put a reed into the distal end, and introduced the reed into the pharynx through the nose. In this way the patient, by blowing through the tube, actuates the reed in his pharynx. This sound takes the place of that ordinarily produced by the vocal cords, with the result that he is able to speak as well as before operation, except that he speaks, or rather intones, in a monotone.

DISCUSSION.

In the subsequent discussion the President said that there was a social stigma connected with any sort of apparatus, and that patients nearly always returned to pharyngeal speech, discarding all apparatus. Dr. Delavan thought that an apparatus was of little use, but he was pleased with the method of treatment described. Dr. Scanes Spicer said that he thought Glück had suggested an opening through the cheek into the mouth for the passage of the reed, which might be less troublesome and more comfortable than passing it through the nasal passages.

THE SURGICAL ANATOMY OF THE TONSILS.

By J. Hardie Neil, M.B.New Zeal., M.R.C.S.,
Surgeon, Throat Department, Auckland Hospital, New Zealand.

This short paper is submitted in connexion with two specimens of tonsils and some large photomicrographs of vertical and transverse sections of the tonsil showing the capsule. Since the last annual meeting I have been able to obtain, amongst others, the fauces of a girl, aged 17, who died of a rheumatic heart. Her tonsils show very markedly the so-called supratonsillar fossa. In fact, they are identical in type with those shown in the illustrations in the article by Paterson in the *Journal of Laryngology*, April, 1888. In that article he describes the supratonsillar fossa as being the unoccupied portion of the second cleft above the tonsil. Further, he claims that the supratonsillar fossa may extend downwards, so as to admit a bent probe between the outer side of the tonsil and the superior constrictor of the pharynx, even as far as the lower jaw, while it may extend upwards and backwards into the soft palate. I think that the No. 1 specimen submitted will show otherwise. It shows that the fossa is entirely within the capsule, and that the capsule is united to the plica triangularis and its upper continuation, the plica semilunaris, and to the posterior pillar. It also shows that it is utterly impossible to pass a probe from the so-called supratonsillar fossa to the space between the tonsil and the lower jaw without marked trauma being used to perforate the capsule. A photomicrograph of a vertical section of the tonsil of the opposite side shows the capsule edge continuous with the plica.

An article published in the *Lancet* of February 13th, 1909, by Mr. G. Seccombe Hett, gives an admirable account of the development as outlined by Killian and the comparative anatomy as investigated by himself. The paper clearly shows that the tonsillar fossa (that is the whole fossa in which the tonsil lies) is in its most primitive form (as in the leopard) simply an elongated tube or pharyngeal diverticulum lined with lymphoid tissue, and that as the human type is approached the fossa or diverticulum is more and more filled with tonsillar tissue. It shows that in the dog, for instance, the tonsillar tissue is confined to the lower half of the diverticulum or fossa, whilst in man the latter is almost completely filled with tonsillar tissue. In the upper part is always found an unfilled part or vestige of the diverticulum that is, in most cases, a mere slit no bigger than an average crypt (see Specimen 2); or, as in Specimen 1, it may show as a comparatively large fossa, either in youth as a result of atavism, or in older age as a result of normal atrophying.

Specimen No. 2 is a hypertrophied tonsil removed by a snare from a child of 8. It shows the capsule adherent to the rim of plica left adherent to the tonsil. The capsule is intact on the outer side of the tonsil, and up at the upper part of the gland, just below the plica semilunaris edge, is a slit that gives access to a space (the so-called supratonsillar fossa) that is entirely within the capsule or thick connective tissue covering of the diverticulum. The only way to get anywhere near the angle of the jaw with a probe would be to enter the mouth of the great crypt or sinus. That would allow the probe (within the capsule, of course) to approach that level. Dr. Paterson, in a criticism in the British Medical Journal of November 2nd, 1908, of my last year's paper, characterized my description of the capsule as a misconception, and thought that it must be the space between the tonsil and the superior constrictor. He suggested that the tonsil could be readily peeled out of that bed. Considering the thick septa given off from the capsule into the substance of the tonsil, that operation would be interesting to watch. In dissecting Specimen No. 1, after hardening the tissue in 2½ per cent. formalin for two weeks, the plica triangularis was cut through horizontally about the level of the middle of the tonsil, and access thus gained to the plane between the plica and the capsule, and then between the latter and the constrictor.

This plane was teased through, and vessels and strands cut. A small cuff of plica was left just at its edge to show its junction with the capsule. The extent to which the diverticulum or fossa penetrates upwards between the pillars varies much in individuals, but, however far it goes, it is separated by its capsule from the surrounding structures.

A probe passed into the great crypt *in vivo* or in a fresh specimen may seem to go down to the level of the angle of the jaw, or, if passed into the great crypt or into the so-called supratonsillar fossa, if the latter is large enough to be found easily, will go sometimes almost an inch beyond the edge of the plica semilunaris. But the tissues in that region are naturally very mobile, and, after hardening, dissection down on the probe will show that it is within the capsule. The prefix "super," which, as a preposition means "above, in the upper part of," would be preferable to "supra," which means "above and beyond." The term "supertonsillar fossa" would give an accurate idea of the anatomy.

THE CLINICAL VALUE OF THE LABYRINTHINE NYSTAGMUS TESTS.

By Dan M'Kenzie, M.D.Glasg., F.R.C.S.Edin.,
Assistant Surgeon, Central London Throat and Ear Hospital.

[Abstract.]

Method.

The usual methods, introduced by Bárány of Vienna, for interrogating the vestibular function include the rotation, caloric, and pressure tests. There is no need to enter into a detailed description of the first and third of these as they have been fully described elsewhere, but as I have modified the method of carrying out the caloric tests, I will briefly detail it. Just as Bárány has endeavoured to test the condition of the labyrinth by measuring the duration of the nystagmus which follows a specified number of rotations in a definite period of time, so I have sought to render the caloric test approach exactitude by measuring the time necessary to evoke the phenomenon. It is obvious that a measurement of the duration of the nystagmus after the caloric test has been employed will yield irregular results, since the change in the meatal temperature, due to the application of cold or heat, must vary in duration in accordance with many factors over which we have no control. Consequently I elected to measure not the duration of the nystagmus, but the time necessary to induce it (the induction period) and to employ the data so obtained along with the character of the eye movements as factors in forming diagnoses. In order to provide uniform conditions I always use water of the same temperature (22° to 24° C.) and raise the vessel in which it is contained to the same height (2 in. above the ear) in all cases. The apparatus is extremely simple, portable, and inexpensive, and is preferable to the rubber-ball syringe usually employed.

My results are as follows: In *health* nystagmus appears in from 20 to 40 seconds (average, 28.5 seconds).

In *hyperexcitable states* of the vestibular system nystagmus appears in from 5 to 15 seconds.

When the *excitability* is *reduced* the induction period is prolonged from 50 to 120 seconds, or more, and when the labyrinth is *irresponsive* no reaction at all follows.

Nystagmus usually appears before vertigo is experienced, but occasionally the order is reversed. The severity of the vertigo usually, but not always, varies inversely with the length of the induction period. In all cases both ears should, of course, be tested separately, and the results compared before coming to any decision as to the presence or absence of unilateral abnormality. It is important to permit the nystagmus induced by testing one ear to pass off before testing the other.

[A detailed description and analysis of 42 cases tested by the author after the manner outlined above occupied the body of the paper, and the conclusions reached were briefly as follows:]

1. In otosclerosis the activity of the vestibular sense bore no relationship to the severity of the deafness.
2. In occupation deafness, concussion deafness, and deafness from meningitis the vestibular reactions were impaired.
3. In syphilis of the labyrinth the vestibular organ was not invariably affected in proportion to the cochlear.
4. In hysterical deafness the vestibular sense was impaired in proportion to the severity of the deafness.
5. In neurasthenic deafness the vestibular system was hypersensitive.
6. In perceptive deafness of indeterminate causation no conclusions were arrived at.
7. In chronic uncomplicated suppuration of the middle ear and in acute mastoiditis, the vestibular reactions were normal or slightly exaggerated.
8. In circumscribed labyrinthitis the vestibular sense was impaired; and the impairment was increased after cure by the radical mastoid.
9. Cases of labyrinthitis were found with spontaneous nystagmus to the opposite side and with normal vestibular caloric reactions.
10. In temporo-sphenoidal abscess the reactions were normal.
11. After the radical mastoid operation in uncomplicated middle-ear suppuration the reactions were increased in two cases and delayed in one.

We may say, then, that in the new tests we have a method of diagnosis which the foregoing cases prove to be at times of considerable value. Let me urge that the vestibular reaction should not be exclusively relied upon in diagnosis, but that it should be taken along with the hearing tests and other symptoms and signs.

In like manner the caloric tests should be supplemented with rotation in doubtful cases before we conclude that the vestibular sense is, or is not, normal.

DISCUSSION.

Mr. Barwell hoped that further investigations, especially upon the normal subject, would be made. He desired further information as to the technique, that is, temperature of water, quantity used, and the force employed in syringing.

Dr. Barr thought that cold water was generally considered injurious when applied to the tympanic membrane.

In reply, Dr. McKenzie re-read portions of his paper, showing that he did not syringe, but used a douche can with a fixed head of water. He said that by cold water he meant 22° to 24° C., and by hot he meant about 42° C.; that the cold was not applied for a sufficiently long time to cause any injurious effect, and that he had never observed any. He had never had sickness nor faintness.

DISCUSSION ON THE TREATMENT OF CICATRICIAL STENOSIS OF THE LARYNX.

OPENING PAPERS.

I.—H. Lambert Lack, F.R.C.S.,
Surgeon, Royal Ear Hospital, London.

Since it is my duty to give a general sketch of the subject, but yet be as brief as possible, I shall discuss merely those interesting cases of laryngeal stenosis which occasionally follow diphtheria, cases in which urgent dyspnoea has necessitated a tracheotomy, and in which there has subsequently been difficulty in dispensing with the cannula.

I believe that the diphtheria itself has no direct connexion with the subsequent stenosis of the larynx, for the following reasons: In every case of such stenosis I have seen the tracheal cannula has been inserted at an unusually high level; in fact, in most cases it has been quite obvious that the laryngeal cartilages have been divided, and that the tube has been put into the larynx instead of into the trachea. All my cases were in very young children, many under 2, and all under 5 years of age. I have never seen laryngeal stenosis follow diphtheria in which a genuine tracheotomy, as distinct from an operation in which the larynx has been opened, has been done. On the other hand, I have seen a number of cases in which laryngeal stenosis has followed an operation on the larynx in small children, such as a thyrotomy for papilloma, and for this very reason I consider the latter operation unjustifiable. Therefore I think we may consider it proved that laryngeal stenosis after diphtheria occurs only when the larynx has been operated on, and that it is not directly a result of the diphtheria. In confirmation of this view, I may add that since I have pointed out these facts, my supply of clinical material has practically ceased.

My first series of cases came from a hospital where it was the recognized practice to perform tracheotomy only when the patient was *in extremis*, and in young children with urgent suffocation the operation could hardly be done deliberately. In such circumstances it was much more easy to open the prominent larynx than to open the trachea. In the older textbooks the division of the cricoid cartilage in children was commonly recommended, and in no work, so far as I know, was there a note as to its risk.

The amount of stenosis which may ensue varies from a slight fibrous or inflammatory thickening up to an almost impermeable stricture. The latter condition is invariably associated with extensive necrosis of the laryngeal cartilages. Why this should take place is beyond

the scope of our discussion to-day, but the fact remains, and its influence on treatment is obvious. When a case is seen early the first indication for treatment is immediately to remove the tube from the larynx. As low a tracheotomy as possible should be done, the upper wound allowed to close, and the case left to Nature. If the original operation has been done but a few days, or even a few weeks, the probability is that the laryngeal condition will quickly recover without any further treatment. Soon it will be found that the patient can breathe with the tracheal cannula blocked, and this should be encouraged. The cannula should at first be blocked for a few hours during the day and subsequently all day. When this is easily tolerated the tube may be blocked day and night. There should be no hurry about removing the tube in these cases. It is better for the patient to wear it a few weeks with a plug in it so as to make certain that it can be removed safely. I have seen dangerous results from neglecting this precaution. The patient may manage to breathe day and night with the tube corked, as the passage through the larynx may just permit sufficient air to enter; but if the patient takes cold and there is any swelling in the larynx, urgent dyspnoea may commence and rapidly prove dangerous. Twice in such cases the tube has had to be reinserted in a hurry. I cannot give exact statistics or fix a time limit—my cases would be too few for this—but all the early cases which I have seen and treated in this manner have resulted successfully. It has been possible permanently to remove the tube in from one to three months. This, then, is the treatment I recommend wherever practicable.

I have tried other methods. In my earliest cases I performed a thyrotomy, excised any cicatricial tissue which I could find, and then placed a solid plug in the larynx, fitting over and lying just above the tracheotomy tube. This plug could be worn *in situ* for six months at a time. Before this I tried to use T-shaped tubes, but it was impossible to keep a T-shaped tube clean. I found them extremely difficult to remove and replace, though I had the tubes specially made in sections for this purpose, and a general anaesthetic was always necessary. When I replaced the upper part of the T-shaped tube by a solid plug, I found less difficulty in introducing it, and as it provided no receptacle for the collection of mucus or secretions, there was no need to remove it so often for cleansing. After the plug had been worn for six months it was removed, and attempts were made by plugging the tracheotomy tube to encourage the patient to breathe through the larynx. Sometimes this was successful after varying intervals of some months, or even years, and it was then possible to remove the tube. Other cases failed. It seemed to me on thinking over these cases that the treatment adopted was illogical, and that quite possibly the good result achieved was due to time and the low tracheotomy, which freed the larynx from all irritation, and not to the attempted dilatation. If, as seemed clear from my experience, the stricture was due to the insertion and presence of the tube in the larynx it was surely illogical to treat it by inserting another foreign body. In my later cases, therefore, I have contented myself with doing a low tracheotomy and leaving the patient alone, and these cases have been the most successful. Of course recovery will not take place where there has been extensive sloughing or necrosis of the cartilages, but in all the milder cases of stenosis, and in those seen early before necrosis has occurred, I am convinced it is the right method to pursue, and that in every case it should be given a trial before any other severe measures are adopted. At the worst it can do no harm.

What I have said with regard to passing a plug upwards into the larynx from the tracheotomy wound applied still more forcibly to intubation. I tried it thoroughly in two cases. I admit I have had no great experience in intubation, and presumably one with greater experience would have more successful results. I found that my little patients could not tolerate the frequent passage of the tube, and that it was impossible to retain it in position for long at a time. It was certainly much more comfortable for the patient to wear a tube or plug introduced from below than to wear one introduced from above, consequently I soon adopted the latter method. However, I must not discuss this subject further or anticipate what Dr. Bryson Delavan has to say about it.

With regard to the treatment of the more severe cases—those with almost impermeable stricture of the larynx associated with extensive necrosis of the cartilages—I shall say nothing. Hitherto I have regarded them as hopeless and condemned them to wear their tubes for ever. I trust that the operation and treatment of which Professor Delsaux is about to tell us may offer us a hopeful method of dealing with them.

Two cases recently under my care I may briefly mention. The first was a baby aged 9 months, who had a laryngotomy performed for diphtheria, and came under my care a month later, because it was impossible to remove the tube. I performed a low tracheotomy and then a thyrotomy, removed a little scar tissue, and inserted a solid plug from the tracheotomy wound upwards into the larynx. This was worn for six months without discomfort; then it was removed, but the tracheal cannula was retained. The patient could bear the cannula corked by day, but had some difficulty in breathing at night. After many months she could bear it corked day and night, but if she caught cold it was necessary to leave out the plug, as otherwise urgent dyspnoea rapidly ensued. There was at that time just sufficient room to breathe through the larynx under normal circumstances, but no margin to spare for catarrh or congestion. The child has worn the tube now for seven years; for the last two years it has been plugged almost continuously, and there is no doubt that she is now able to dispense with her cannula. There seems to me no doubt that the good result was due to the low tracheotomy—that is, to the removal of all irritation from the larynx and to the natural growth of the parts. The recovery was probably delayed rather than helped by the six months' dilatation of the larynx.

The second case was an adult of 21, who had a tracheotomy performed for diphtheria at the age of 4. On examination I found that the tube had been inserted and was still being worn through the right ala of the thyroid cartilage. There was extensive destruction of this cartilage and very marked stricture of the larynx. The left vocal cord was healthy and moved normally; the right was replaced by scar tissue. I performed first a low tracheotomy and then a thyrotomy, cutting away all the fibrous tissues down to the cartilage on the right side, and paring the edges of the wound which had become epithelialized. No attempt was made to dilate the larynx. The result was better than I expected. In two months the patient was able to dispense with his tracheotomy tube, and he returned home cured.

II.—Dr. V. Delsaux,

Brussels.

TRACHEO-LARYNGOSTOMY.

Dr. StClair Thomson, our President, having asked me to describe the new operation of tracheo-laryngostomy in the treatment of cicatricial stenoses of the upper air passages, I now proceed to do so, confining myself to describing the indications, the operative technique, and the results of the operation. Should further details be required, the subject will be found fully described in MM. Sargnon and Balatier's book and articles. It consists in making a large opening in the larynx and upper part of the trachea, and leaves it open for, in any case, a long time.

Indications.

It is an operation applicable to every case of stricture of the upper air passages, with the exception of stenosis, caused either by lupus or tuberculosis.

As an example of its application in difficult cases, I will specially mention those good results obtained by M. Sargnon in a severe case of post-typhoid stenosis caused by perichondritis of the larynx, and in stenosis the result of a horse bite, and similar beneficial results in several cases operated on by Dr. Iwanow of Moscow, which are still undergoing the dilatation part of the operation.

Pre-operative Measures.

The patient is prepared in the ordinary way for operation; the forehead and the neck are carefully disinfected, as well as the mouth and teeth. No operation should be undertaken when bronchial or tracheal catarrh is present.

Anaesthesia.

My own preference is for general anaesthesia during the operation, though I regard local anaesthesia as sufficient.

The Patient's Position.

In order to prevent blood flowing into the trachea, the patient should be placed in Rose's position, and the head held by an assistant.

Instruments.

Tracheo-laryngostomy in technique is very similar to laryngotomy. Two laryngeal cannulas should be prepared according to the patient's age; the tampon cannula is not necessary, because the haemorrhage is not usually severe if adrenalin be painted on the mucous membrane. In my experience the Lombard-Sargnon cannula is the most suitable; and two or three knives, scissors, and Moure's cutting forceps for the laryngeal cartilage, pressure forceps, two retractors, rubber tubes of different size and length, a good electric light (the frontal mirror of Clar is very suitable), and some tracheoscopic tubes (Killian's short tubes), are all that is required.

Operation.

We can divide the operation into seven different stages: (1) Incision through the soft tissues of the neck; (2) longitudinal division of the laryngeal and tracheal cartilages; (3) suturing the soft tissues to the skin on each side; 4) median division and excision of the scar tissue; (5) introduction of the cannula and rubber dilator; (6) dressing the wound; (7) subsequent dilatation.

1. The preliminary incision varies in length, according to the position of the previous tracheotomy, extending from it upwards to the upper margin of the thyroid cartilage. Bleeding is carefully arrested. Then the cellular tissue is divided as well as the fascia, on director, or with the knife handle, and the intermuscular fascia sought for. Previous to the division of the thyroid isthmus t should be ligatured.

2. When the cartilages of the larynx and trachea are exposed, the operator removes the cannula and, with scissors, divides from below the cricoid and thyroid cartilages with Moure's cutting forceps. The cannula is then replaced at the lower end of the wound, which is plugged. After a few minutes the plug is taken out and the retractors are placed on each side of the larynx, which is then carefully explored.

3. In the third stage the mucous membrane of the larynx is sutured to the skin. Three good ligatures of silk on each side are quite sufficient.

4. Excision of the scar tissue must be as complete as possible. This is very much better than incision in the middle line and dilatation, as formerly recommended by Sargnon. It must be remembered that at the lower part of the larynx the oesophagus lies quite close to the left and posterior side of the latter. In his first laryngostomies Killian used the T-shaped cannulas of soft rubber. Sargnon prefers a vertical tube adapted to his special cannula with a silk thread. The latest improvement is due to Fournier, who introduces the cannula itself through an opening in the rubber tube—the tracheotomy cannula has, of course, an opening in its upper part. By this means dilatation is secured and is most efficient. In fact, many laryngologists think it is, perhaps, too effective.

5. The question of dilating with gauze rather than with rubber tubes during the first days after the operation is not quite decided, but I prefer rubber tubes less hard than the ordinary ones, of exactly suitable size, in order to obtain the proper pressure. I do not like the wood dilators used by our Italian colleagues, because the wood is too rapidly infected and is not soft enough.

6. The dressing consists of two parts: The first keeps the dilator in place within the laryngo-tracheal tube; the second consists of an external dressing of the cannula. In order to obtain more pressure (when required) Labarre's method is to be recommended.

The purpose of the cannula apparatus I use is to reinforce by means of a second rubber tube folded on itself in the shape of the letter S the pressure on the dilating tube. The whole appliance (a cannula with the opening on its ridge and the dilating tube) resembles in many respects the chimney cannula formerly employed in cases of cicatricial stenoses of the larynx. The apparatus allows of the patient eventually breathing through the natural passages, but this result is not obtained immediately after the operation. About two weeks or more afterwards it is possible, in certain cases, to close the opening of the cannula by means of a cork and to re-educate the breathing forthwith.

Post-operative Measures.

During the first days after the operation liquid food must be given through the oesophageal sound introduced through the nose or by means of a spoon. The inner cannula must be frequently cleansed and boiled, the mouth should be cleaned many times during the day. As a rule, at the beginning of the treatment the dressing is to be removed every day, and, if necessary, twice a day. The temperature must be regularly taken, and, when removing the dressing, the surgeon will specially look for any gangrenous tissue and repeatedly apply to it peroxide of hydrogen. If reflexes and tenderness are present, painting the mucous membrane with adrenalin and cocaine will be found advantageous. A short time after the scar tissue has been eliminated the epidermis begins to grow over the granulations which appear in the new laryngo-tracheal tunnel, so that healing goes on day by day.

7. As for dilatation, the time for which it must be continued depends in every case upon the age of the patient, upon the thickness of scar tissue, and many special circumstances which cannot be described or defined in advance. It varies from three months to one year and more. The diameter of the dilating tube must always exceed that of the trachea in order to prevent a new stricture. It should be 2 mm. greater in the case of infants and 3 to 4 mm. in adults.

When all the parts of the mucous membrane are covered with epidermis, the upper part of the wound should be allowed to heal. This will make the introduction of the dilating tube somewhat difficult, but it is advisable in order that the future plastic operation may be reduced to a minimum. Three or four weeks before undertaking the plastic operation the patient is allowed to breathe without any cannula or tube for one or two hours a day, increasing the duration from day to day. At the same time adhesive plaster is placed on the aperture, so that the patient may be taught to breathe in just the same conditions as before the stricture occurred.

I attach very great importance to this practice, because it makes the patient fully confident in himself. I think the post-plastic accidents which sometimes happened were due to the fact of insufficient re-education of natural breathing.

It is quite impossible to say how long the patient must be re-educated. He must be assured that he can breathe without the least inconvenience for hours and hours *per vias naturales*, and that nothing can bring him again in danger of asphyxia. The patient having thus regained confidence, the surgeon may proceed to the performance of the plastic operation for the closure of the opening. This closure should be complete, no safety opening being left. If the laryngo-tracheal tube is sufficiently dilated, if the patient is re-educated enough and breathes largely through the nose, if he is not out of breath when he runs, there is no reason for not closing the opening. As for the method to be selected, in the case of a large opening Glück's procedure with two square flaps of skin is advisable. Another procedure consists in cutting two elliptical flaps and suturing them in the median line with the skin surface turned inwards, and covered with two lateral flaps also sutured in the median line. Should the opening be small, local analgesia is quite sufficient.

I have gathered in a synoptic list the results of 36 cases of laryngostomy, and these give an idea of the duration and results of the operations. These 36 cases show 14 cures, 14 still under treatment, 6 deaths, 1 unsuccessful, and 2 lost sight of. In other words: (1) About 39 per cent. of these cases of cicatricial chronic stenosis of the larynx and trachea are quite cured. (2) About 33 per cent. are still under treatment, the plastic operation not having yet been performed. (3) Death occurred in 16.6 per cent. of all the cases, in 4 instances from bronchopneumonia, in 2 from hypertrophy of the thymus gland. (4) There was but 1 case unsuccessful. (Dilatation was carried on for two months only.) (5) Three cases may be considered as doubtful, because it is not known what became of them.

TABLE SHOWING THE RESULTS OF 37 CASES OF LARYNGOSTOMY.

Authors.	Age of Patient	Cause of Stenosis.	Nature or Seat of Stenoses.	Previous Treatment.	Laryngostomy.	Duration of Dilatation.	Results.
1. Jaboulay (Lyons)	30	Laryngo-tracheal lues	(?)	Twice thyrotomized in 1899 without any result	June, 1899, excision of scar tissue, insufficient dilatation	Dilated during (?) Plastic (?)	Cured.
2. Collet and Jaccod (Lyons)	6	Diphtheria	Cicatricial cricoid stenoses	Intubation, tracheotomy	July, 1906	8 months. Plastic in August, 1907	Cured.
3. Descos, Viannay, and Mandy	6	Diphtheria	Cicatricial cricoid stenoses	Internal dilatation with Schroetter's catheter	May 25th, 1906, excision of scar tissue	Dilated during 8 months. Stenosed again, dilating with T-shaped tube	Under treatment. No plastic operation.
4. Viannay and Descos	5	Diphtheria	Cicatricial cricoid stenoses	Internal dilatation with Schroetter's catheter	December 20, 1907, excision of scar tissue	Dilated during 4 months	Death from broncho-pneumonia.
5. Viannay and Mandy	8	Diphtheria	Cicatricial cricoid stenoses	Tracheotomy—Schroetter's dilatation	December 18, 1907, excision of scar tissue	The child bears a T-shaped tube. Plastic impossible. Asphyxia.	Still under treatment. No plastic operation.
6. Descos and Viannay	5	Diphtheria	Cicatricial cricoid stenoses	Schroetter's dilatation during 6 months	May 30, 1908, excision of scar tissue	4 months. The child bears a T-shaped cannula	Still under treatment. No plastic operation
7. Sieur and Rouvillois	23	Larynx fracture	Incomplete cricoid stenoses	Tracheotomy, intubation	May 5, 1908	4 months. Plastic after 1 month more	Cured.
8. Sieur and Rouvillois	23	Laryngo-typhus	Tight cricoid stenoses	Tracheotomy	May 8, 1908	5 months. Asphyxia when taking out the tube T-shaped	Still under treatment. Plastic operation impossible.
9. Broca and Roland	5	Diphtheria	Total cricoid stenoses	Intubation and tracheotomy	January 28, 1907	6 months. Asphyxia when taking out the tube T-shaped	Still under treatment, Plastic operation impossible.
0. Guisez (Paris) ...	13	Submucous laryngitis	Cicatricial chondro-cricoid stenoses	Internal dilatation unsuccessful	November 14, 1908	4 months. In May, 1909, relapse of cicatricial bridles	Under treatment. No plastic operation.
11. Cheval and Labarre	7	Diphtheria	Total stenosis	Unsuccessful thyrotomy in June, 1907	January 20, 1908	5 months. The child bears a T-shaped tube	Under treatment. No plastic operation.
12. Cheval Laboure (Brussels)	2	Diphtheria	Laryngo-tracheal tight stenosis	Intubating and tracheotomy	July, 1908	4 months. All going well, when child got a broncho-pneumonia	Death from obstruction of the tube.
13. Goris (Brussels)	32	Lues	Chronic cicatricial bronchitis	Tracheotomy	December 6, 1907	6 weeks. Cicatricial relapse	Unsuccessful.
14. Jauquet (Brussels)	7½	Submucous laryngitis	Cicatricial stenosis	Tracheotomy; T-shaped cannula during many years	October 26, 1907. Excision of scar tissue	4 months dilated. Bears a T-shaped rubber tube	Under treatment. No plastic.
15. Ruggi (Bologna)	28	Laryngeal stenosis, probably caused by lues	Cicatricial stenosis	Schroetter's dilators	Laryngostomy and dilatation with gauze	3 months	Under treatment. No plastic.
16. Canepele ...	20	Suppurative perichondritis	Tight stenosis	Dilatation with catheters and Schroetter's tubes	1904. Laryngostomy and dilatation with gauze	3 months dilating. Operative plastic	Cured.
17. Canepele ...	Child	Foreign body of the larynx	Cicatricial stenosis	Tracheotomy	Laryngostomy	3 months. Operative plastic	Cured.
18. Melzi and Cagnola	58	Laryngo-typhus in the year 1905	Tight cicatricial stenosis. Oesophago-tracheal fistula	Internal dilating	November 18, 1906. Excision of scar tissue; suture of the fistula	3½ months. Operative plastic in March, 1907	Cured.
19. Melzi and Cagnola	5	Diphtheria 4 years previous	Subglottic cicatricial stenosis	Tracheotomy and internal dilatation	May 1, 1907. Excision of scar tissue. Gauze	2½ months. Plastic operation	Cured.
20. Melzi and Cagnola	5½	Diphtheria	Cicatricial tight diaphragm	Intubation, tracheotomy	March 3, 1908. Scar tissue removed	½ month. Special wood tampon; plastic	Cured.
21. Melzi and Cagnola	6½	Diphtheria in November, 1905	Total cicatricial stenosis	Intubation for 2 months, tracheotomy	June 15th, 1908, scar tissue removed	4 months. Special tampon. Plastic	(?)
22. Ferreri	25	Laryngeal papillomata	Cicatricial stenosis	Tracheotomy, 1906, Laryngotomy in January	January 4th, 1908, scar tissue excised	6 months. Cotton-wool tampon. Plastic operation in July, 1908	Cured.
23. Gradenigo (Turin)	Old Man	Syphilis	Laryngeal stenosis	Tracheotomy	Laryngostomy	Gauze dilating for 2 months	(?)
24. Dan McKenzie...	Child	Syphilis	Tight stenosis	Dilatation not possible	Laryngostomy	—	Death from broncho-pneumonia.
25. Van den Wildenderg (Antwerp)	8	Laryngo-tracheal papillomata	Cicatricial cricoid bridle	Thyrotomy for 3 years	Laryngostomy	3 months. Rubber tube	Under treatment.
26. H. Tilley (London)	?	Diphtheria	Cicatricial stenosis	Tracheotomy	October, 1908	2 months. Plastic operation	Cured.
27. Rabot, Sargnon, etc. (Lyons)	6	Diphtheria	Cicatricial cricoid	T-shaped cannulas	Laryngostomy	6 months. Plastic operation	Cured.
28. Vignard, Sargnon, and Barlatier	8	Submucous laryngitis	Tight cicatricial stenosis	Dilating cannula; internal rubber dilating	Laryngostomy	3½ months. Plastic operation	Cured.
29. Vignard, Sargnon, and Barlatier	4	Submucous laryngitis	Tight cicatricial stenosis	No treatment	Laryngostomy	—	Death from broncho-pneumonia the 5th day following operation.
30. Garel, Sargnon, Barlatier	6	Submucous laryngitis	Tight cicatricial stenosis	No treatment	Laryngostomy	3 months. Plastic operation with safety opening	Cured.

TABLE SHOWING THE RESULTS OF 37 CASES OF LARYNGOSTOMY *(continued)*.

Authors.	Age of Patient	Cause of Stenosis.	Nature or Seat of Stenoses.	Previous Treatment.	Laryngostomy.	Duration of Dilatation.	Results.
31. Maufory, Broca, Sargnon	11	Rubeolic laryngitis	Tight cicatricial stenosis; cricoid cartilage ossified	Intubating; dilating, cannulas; Schroetter's tubes; thiosinamine	Laryngostomy	9 months. Relapse of cicatricial tissue; 8 months' dilatation: incomplete plastic operation	Death from thymus hypertrophied.
32. Delsaux and Sargnon (Brussels)	20	Trauma wound of larynx and trachea by cutting knife	Tight subglottic cicatricial stenosis	Dilatation for 1½ years; thyrotomy	November 2, 1907	3½ months. Total plastic operation	Cured.
33. Sieur, Rouvillois, Sargnon (Paris)	25	Laryngo-typhus	Cricoid chondritis; tight stenosis	Intubating	Laryngostomy	5 months. No plastic operation	Under treatment.
34. Fournier, Sargnon	8	Diphtheria	Total cricoid stenosis	Opened cannulas after tracheotomy	Laryngostomy	3½ months. No plastic operation	Under treatment.
35. Monprofit, Kauffman, Sargnon	5	Diphtheria	Cricoid stenosis	No treatment at all	Laryngostomy	6 months. Relapse of scar tissue; dilatation for 1 month; no plastic operation	Under treatment.
36. Boulloche, Sargnon, Robert	2	Submucous laryngitis	Tight cricoid stenosis	No treatment at all	Laryngostomy	16 days	Death from thymus hypertrophied.
37. Boulloche, Egger, Sargnon	12	Diphtheria	Tight cricoid stenosis	Dilating by laminaria	Laryngostomy; resection of the cricoid	Still dilated	Under treatment.

In comparison with other methods of treatment, tracheolaryngostomy has proved to be the most successful operation up to date, so that I am able to conclude that, as a rule, when other measures fail, this new operation should be performed in cases of chronic cicatricial laryngotracheal stenosis.

III.—Dr. DAVID BRYSON DELAVAN,
New York.

TREATMENT BY THE METHODS OF O'DWYER AND ROGERS.

IN the successful management of stricture of the larynx three things are absolutely essential:

1. That the stricture be relieved.
2. That the relief of the stricture be permanent.
3. That the treatment of the case be conducted with the least possible injury to the parts involved.

Many operators have endeavoured to treat these cases, and by various means. Some, like Sir Morell Mackenzie, Whistler, and Schroetter, have used intralaryngeal methods. Others have resorted to operations of a more or less extensive character. Treatment by occasional and temporary dilatation has proved a failure, while operative measures have generally left the case worse off than it was before. It remained for O'Dwyer to solve the problems of the situation and to effect a method by which all of the necessary indications were completely met and the disadvantages of other methods avoided. First, he proved the hitherto unknown fact that the larynx would tolerate the presence of a foreign body for indefinite lengths of time. Then he devised the O'Dwyer tube, an instrument which, with suitable modification, fulfils in a remarkable degree the indications present in the cases under our discussion.

No great contribution to surgery has ever been more modestly presented, nor has surgery often received a gift more indicative of important future results than the article published by O'Dwyer in the *New York Medical Record* for June 5th, 1886, entitled, Chronic Stenosis of the Larynx Treated by a New Method, with Report of a Case. How thoroughly the author himself appreciated its value will appear from his own words:

> Chronic stenosis of the larynx is one of the most unsatisfactory diseases which the physician is called upon to treat. Although I have treated only a single case of it with my laryngeal tubes, I am fully convinced that they will prove infinitely superior to anything yet devised for the relief of this unfortunate class of sufferers.

Two years after the foregoing was published, Dr. O'Dwyer, in the following remarkable statement, says:

> Had intubation of the larynx proved a complete failure in the treatment of croups, I would still feel amply repaid for the time and expense consumed in developing it, for I believe that it offers the most rational and practical method yet devised for the dilatation of chronic stricture of the glottis.[1]

Since the publication of O'Dwyer's prophetic article, the value of his method has been recognized and it has been applied with success by large numbers of experimenters in many parts of the world. Many who at first objected to it are now its firm advocates. Moreover, an ever-increasing amount of clinical evidence based upon the actual treatment of cases has been accumulated, all of which tends to prove that intubation, used under proper conditions, has succeeded in effectively meeting the indications present in the treatment of chronic stenosis of the larynx.

The work so ably begun by O'Dwyer has been taken up by others, notably by Dr. John Rogers, jun., of New York,[2] through whose keen appreciation of the possibilities, rare technical skill and untiring ingenuity and patience, the method of O'Dwyer has been brought to a high degree of perfection, and it has been used with success not only upon adults but upon children, and even upon very young infants.

The possibility of the successful application of intubation in the chronic laryngeal stricture of infants has been abundantly proved through the brilliant series of cases operated upon and reported by Dr. John Rogers. While a majority of these were due to hypertrophic laryngitis, some were complicated with cicatrices, and all of them demonstrated the practicability of the method.

Ten of Rogers's successful cases were under 6 years of age. There was one case each at the ages of 1, 2, 5 and 6 years respectively, and three each at 3 and 4. One case is interesting because the stenosis was due to hypertrophic laryngitis following intubation for diphtheria, and this complicated by cicatrices resulting from several laryngofissures and tracheotomies, the former done for the purpose of allowing the incision and the removal by dissection of numerous cicatricial bands. At the end of two years of treatment the patient was apparently cured.

The method may be employed without tracheotomy or with tracheotomy, either as simple intubation or associated with fixation of the tube through the fistula.

Among the other varieties of laryngeal obstruction to which it is applicable, those which come within the limits of our discussion or which represent conditions which may give rise to the formation of cicatrices are as follows:

1. Cicatrices of traumatic, operative, or inflammatory origin. When following tracheotomy the deformities may be due to: (*a*) Contraction of the posterior soft part of the trachea following separation anteriorly by the cannula of the tracheal rings; (*b*) dislocation of the cricoid forward and downward, especially when the fistula is through or close to it; (*c*) overriding of the cut anterior ends of the tracheal cartilages in too long a fistula; (*d*) inversion of the cut anterior ends of the tracheal rings,

[1] *New York Medical Journal*, March 10th, 1888.
[2] *American Journal of Medical Sciences*, November, 1905, and April, 1908.

especially if the fistula is to one side of the median line; (*e*) contraction of the trachea around the cannula, due to sloughing of the cartilages or rings; (*f*) spur formation posteriorly, especially in combination with contraction of the posterior soft portion of the trachea, or dislocation of the lower segment forward and the upper backward, or both.

2. Granulations around a cannula or intubation tube, which are much less common than is generally believed.

3. Hypertrophic subglottic laryngitis, most commonly encountered in retained tube cases.

4. Prolonged and repeated diphtheritic inflammation, which must be exceedingly rare in these days of antitoxin, although it is worth noting that there is at least one case on record in which the exudate was demonstrable on the one hundred and fifty-first day.

Before attempting to describe the O'Dwyer-Rogers method a word must be said as to the principles upon which it is based and the indications which justify its use. It is essential that these indications be very clearly understood. The interior of the larynx is practically a cavity or tube, having rigid inelastic walls and lined with various soft tissue, the latter liable to injury and therefore to the formation of cicatrices. The presence of cicatrices at the posterior aspect of the larynx is likely to interfere with the normal physiological movements of the dilators of the glottis as well as to encroach upon the glottic space. Anteriorly, a lesion situated at the apex of the vocal bands is analogous to one located in any other angle of the body—as, for instance, between the fingers or at the corner of the mouth. A solution of continuity of tissue in any such angle is sure to result in adhesions as the process of healing advances, and in many cases such adhesion, if left to itself, will only be limited by the extent of the pre-existing lesion.

The history of scar tissue is much the same wherever cicatrices may be found; for example, any attempt to divide web fingers without closing the wound at the apex of the angle in such a manner that the granulating parts cannot come together at that point will surely result in failure, and will produce a condition of adhesion worse than that which existed before. This is one of the oldest recognized surgical facts. Nor is it only in the case of V-shaped wounds that this tendency to adhesion is observed. In nasal surgery it is a matter of commonest occurrence that unless injured parts have been kept separate from each other until healing has been fully accomplished adhesion is almost certain to take place. This is particularly true of the larynx. The incision of a thin web of tissue may possibly be sometimes successfully accomplished, but incisions into dense scar tissue will almost invariably reunite, even after long-continued dilatation. The incessant activity of the movements of the larynx and the delicacy of its soft parts render it peculiarly liable to accident, and to the conditions which we are considering. None of the methods possible in other situations, such as the transplantation of epithelium, the use of mucous flaps, or any of the other ingenious plastic devices sometimes used in other situations have been made available in the larynx without resort to laryngo-fissure.

What has just been said at once suggests the fact also that the attempted removal of cicatrices from the larynx is not likely to be attended with ultimate success, since it appears that in most cases, with the lapse of a relatively short space of time, the intralaryngeal obstruction will reappear. This has been demonstrated time and again in another connexion—namely, in the attempt to relieve dyspnoea due to abductor paralysis of the larynx, or other causes by which the vocal bands have fallen together to such an extent that proper respiration has been impossible. In such cases the performance of thyrotomy and the removal of one or both vocal bands has almost invariably resulted in ultimate failure. So, also, when the attempt has been made to excise cicatrices, or to incise them and afterwards dilate, failure has been in even greater measure the rule.

It cannot be too clearly understood that operations upon the larynx, whether from within or without, tend in themselves to the production of stricture. In view of these facts it would seem necessary that, in order to obtain permanent success, the cure of this condition should be based upon principles different from those involved either in simple temporary dilatation, in incision of the scar with dilatation, or in resection of soft parts as has heretofore been practised. The principle of treatment upon which the greatest success in these cases seems to depend is that scar tissue in general when subjected to long-continued stretching will finally lose its resiliency. For this there are many illustrations; as, for example, the stretching of the cicatrix in the case of a scar following a laparotomy, or following an operation for hernia and the like. Instances are not wanting to show that the same results have been obtained in the larynx. Proof of this would seem to lie in the fact that cases of cicatricial stenosis in which the stricture has persistently returned after relatively short periods of intubation have been cured by long-continued retention of the tube.

In order to succeed in producing satisfactory pressure upon the cicatrix two things are absolutely necessary. First, that the instrument be adjusted with great accuracy to the shape as well as to the size of the stricture. The ordinary O'Dwyer tube will not answer the purpose. Each case must have its own tube, which must be modified in every instance to meet accurately and completely the special requirements of the conditions in hand. To adapt the tube properly to the case will demand on the part of the operator much skill and experience and a practical development of the sense of form and proportion. All of these qualities and attainments are possessed by Dr. Rogers in a high degree, and it is by reason of them that he has been enabled to bring the method to its present perfection.

Secondly, that the intubation instrument used be large enough to exert steady and active pressure force upon the contracted tissues, stretching them up to the limit of possibility, and for considerable periods of time.

According to Dr. John Rogers the principle which he has found successful in the treatment of hypertrophic laryngitis and in cicatrices of the upper part of the respiratory tract involves simply long-continued and constant dilatation, which stretches the contracted tissues to the utmost limit they will bear without sloughing, and up to the largest normal calibre of the passage in question, and so overcomes the obstruction by producing a permanent pressure atrophy in the affected parts.

To accomplish the continued dilatation and consequent pressure atrophy necessary to overcome the obstruction of either a hypertrophic laryngitis or a cicatrix, a properly modified O'Dwyer intubation tube is almost a perfect instrument. It can be worn without harm to the patient for months or years, and Rogers has observed such patients with the tubes in place to pass successfully through measles, pneumonia, typhoid fever, and even whooping-cough; indeed, it does not seem appreciably to increase the gravity of the prognosis of these affections. The tube, as is well known, possesses a head which rests on and in the aryteno-epiglottic folds, a neck constricted from side to side to fit between the vocal bands within the glottis, and below a retaining swell which expands to occupy the space at and below the cricoid cartilage. The tip is again constricted from side to side to pass easily through the glottis. The "normal" tubes were designed by Dr. O'Dwyer from casts and measurements to fit somewhat loosely the average larynx and to exert the least possible pressure upon acutely inflamed tissues compatible with retention of the instrument. When this stage of the disease has passed and has been succeeded by a chronic thickening or a cicatrix, the tube, to obtain the pressure necessary to produce an atrophy of the abnormal thickening, must be modified into a "special" instrument for each case. That is, with the patient under deep general anaesthesia, a number of normal tubes are passed through the larynx until one is found in which the retaining swell distends the constriction to the limit the operator believes it will bear without sloughing. If the difficulty is dependent solely upon a soft hypertrophy, the diameter of the retaining swell will be regulated largely by the diameter of the passage within the cricoid cartilage.

Inasmuch, however, as the retaining swell lies, when the tube is in place, just below this point, where the trachea is capable of considerable distension without damage, quite a little force in the test tubage is permissible. Having thus ascertained the largest possible diameter of the larynx, a "special" tube is made of the length of the normal tube suitable for the age and development of the patient, but with a retaining swell having the same diameter as that of the trial tube. The neck of this "special" tube, however, to exert pressure upon the hypertrophied intralaryngeal tissues, should be as large

as possible, but its transverse diameter must be $\frac{3}{32}$ in. smaller than the retaining swell, or it will certainly be coughed out. Also, the head must have a diameter $\frac{6}{32}$ in. greater than the retaining swell to prevent the instrument from slipping within the larynx. These measurements apply to the ordinary hard rubber tube, but when the heavier metal tube is employed the diameter of the head should exceed that of the retaining swell by $\frac{7}{32}$ in. or even $\frac{8}{32}$ in., especially for adults. For very small children these measurements can be changed from $\frac{1}{32}$ in. to $\frac{1}{64}$ in. It must be borne in mind that a difference of $\frac{3}{32}$ in. in the transverse diameters of the neck and retaining swell is the very least which experience has demonstrated is sufficient to keep the tube in place, and many patients will require a tube with the neck $\frac{4}{32}$ in. or even $\frac{5}{32}$ in. less in diameter than the retaining swell. Only a trial will show what is necessary. But the neck of the special tube must be considerably larger than that of the normal, or a failure to cure will probably result.

When auto-extubation complicates the difficulties—and it may be a very dangerous complication if assistance is not constantly and immediately available—tracheotomy is almost always necessary. Some patients with hypertrophic laryngitis will cough up any tube which can be inserted, and, unless it is quickly replaced, will strangle. Under these circumstances, it is generally essential to provide an opening in the trachea, though there can be no expectation of thus accomplishing a cure of the stenosis. Indeed, it will probably only add a cicatrix or a deformity in the shape of an obstructing "spur" in the posterior wall of the trachea if the cannula is worn long enough. The operation should be performed carefully in the median line well below the cricoid cartilage, under full anaesthesia, with the tube in place. At the same time, opportunity is thus given to obtain the necessary measurements for making what Rogers has described as a "plugged" or "clamped tube." This is a "special" intubation tube with the neck (or lower end, if there is a cicatrix low down) enlarged to exert pressure upon the contracted area. The "clamp" or "plug" portion of the tube is a removable attachment designed to fasten to the tube at right angles through the tracheal fistula after the tube is inserted, and thus prevent its displacement. The larger tube will support a "plug" or a cylindrical piece of hard rubber, which is hard enough so that when in place its outer end extends through the fistula about an inch beyond the surface of the neck, to allow easy manipulation, and at its inner end, perforated to correspond to the lumen of the intubation tube, screws into a hole in the anterior wall of the intubation tube. The "clamp" is employed for smaller instruments, and is made, like a pair of obstetrical forceps, of two little silver blades, which are passed through the fistula into grooves on the sides of the tube and held there by a "collar" screwed down around the shanks.

Of these two attachments, the plug is probably better for large or for metal tubes, and the clamp for smaller instruments and those made of rubber. The clamp is also better in that it can be made small enough not to press apart appreciably the severed anterior segments of the trachea, and thus, by preventing contraction in the soft posterior wall, there will not be so much danger of narrowing the calibre of the passage when the instrument is removed. A tube with either of these attachments cannot be coughed out, and it can be worn for an indefinite period without harm, and in all respects is infinitely better than the ordinary cannula. If, therefore, a patient with a hypertrophic or cicatricial stenosis of the upper air passages has to be tracheotomized, one of these instruments should be inserted as soon afterward as it can be obtained and continued in place as advised for the usual special tube. Neither a plugged nor a clamped tube should, however, be employed unless there is some good reason for it, as the tracheal fistula gradually, of course, becomes permanent and presents its own difficulties, although these may be offset by the ease with which, after removal of the tube, any adductor spasm can be met.

The usual intubation tube is made of vulcanized rubber, which is an ideal material, as I have never known it to clog and it is practically indestructible. It does, however, have to be removed and cleaned about once in a month or six weeks, as the head generally becomes foul, and this decomposing matter might cause sepsis or possibly obstruct the lumen. But occasionally, in cases of hypertrophic laryngitis, the special rubber instrument, even after months of continuous use, will seem to produce no improvement. Then by changing to a similarly-made metal tube the desired result will generally be obtained. We are unable to explain this, except that the metal tube is heavier and so may exert more pressure; or there may be some electrolytic effect, as it is constructed of bronze or brass heavily plated with gold, and so consists of at least two metals which are in contact with moisture. Whatever reason may be given, the metal tube will often succeed when the rubber has seemed to fail; but the latter should always be tried first, as in the average case it is sufficient and safer. The metal tube soon becomes rough with a presumably calcareous deposit, which catches the secretions, and in at least one of Roger's cases thus produced asphyxia. After wearing such an instrument, preferably of hard rubber, for months, it is very necessary to consider the adductor spasm both for diagnosis and treatment. When a cure ought to have been obtained the conditions may seem entirely unchanged, and the true state of affairs can only be ascertained by general anaesthesia. Under ether, then, about once in every three or four months the tube should be carefully removed and the respiration observed. If it is still completely or partially obstructed, the dilatation must be resumed. But if the breathing is natural and easy, then spasm may be confidently diagnosticated, especially if in the first effort at coughing, as consciousness comes back, the dyspnoea recurs. To overcome this there must be inserted for several days or weeks a tube with a head and retaining swell and length like the previously-worn dilating instrument, but with a neck as small as possible in order that motion to some extent can occur in the openers of the larynx. If the dyspnoea makes its appearance slowly during the course of hours or days, it is not due to adductor spasm, and there is no escape from the previous treatment. When enough time—some one or two months—has passed with the very small-necked tube in the larynx, and the faulty muscles may be considered to have regained their strength and the patient his power to innervate them, the small tube is removed under ether, and a little morphine is administered to allay spasm and nervousness. For the first few hours, however, the attendant and the patient will suffer much anxiety, as frequent attacks of stridulous inspiration and more or less dyspnoea will occur during the readjustment to new conditions. But with patience and the assistance of antispasmodics a day or two will suffice to overcome all such difficulties.

A fibrous stricture is managed in exactly the same way, with the exception of the primary dilatation in case the stenosis is too tight to admit a tube. Under these conditions there is already a tracheal fistula, or one is urgently needed, and through this, under general anaesthesia, urethral sounds are passed up and down until considerable resistance is encountered. Then measurements are taken upon an ordinary tube, and a "special" one is constructed, having its specially enlarged part placed to correspond with the location of the stricture and with regard to the normal diameter of the air passage, which is capable of much stretching without damage, except within the cricoid ring. When the latter has been cut in a hasty previous operation there seems to be little danger of sloughing under almost any reasonable pressure, but if it is intact such an accident is conceivable, and actually occurred in a case cited by Dr O'Dwyer. Sometimes in very dense strictures a small tube can be inserted for a week or two, and afterwards a larger size. But no stricture should be considered hopeless, provided any trace of mucous membrane remains, as I have had experience in at least one such case in which the passage through the larynx had to be opened by a careful dissection very much like that required for an impermeable stricture of the urethra. A small tube was then inserted and the wound partially closed, and later larger instruments were employed, and eventually an almost perfect result was obtained.

As regards the prognosis and duration of treatment in patients with hypertrophic laryngitis or cicatricial stenosis, the statistics of the 23 cases previously reported by Rogers furnish much information. One of his cases of hyper-

trophic laryngitis (Case I), the only one in the series which seemed to have occurred spontaneously, and without a previous diphtheria, recovered permanently at the end of about four weeks of dilating tubage. Another of cicatricial stenosis, previously reported as a failure, required forty-nine months, or a little over four years, of continuous intubation, and during the latter two of these four years the tube was not once removed from the larynx. It has now been out for over six months and there is no sign of recontraction and the voice is returning. Three other cases, the most discouraging of the series of instances of hypertrophic laryngitis, complicated by cicatrices due to tracheotomies and explorations through the thyroid cartilage, required respectively about six, three and five years of dilating tubage to effect a cure, which now may be considered permanent, as they have remained for nearly two years without any sign of difficulty, and all have good voices. Two other cases would have recovered sooner with less impatience and more experience, for as soon as they seemed well their tubes were removed, with the result that the cicatrices recontracted. A fibrous stricture apparently requires at least two years of continuous dilatation to the utmost limit of the normal lumen of the respiratory tract before it can be considered as permanently overcome. Even then it may gradually reappear, and, if it does, another six months or a year of continuous tubage must be endured, but there is a reasonable certainty, as proved by experience, of thus gaining an ultimate cure. Cases of hypertrophic laryngitis are slow and troublesome enough, but once well do not recur as does a cicatrix. One case of hypertrophy had to wear a dilating tube from February, 1904, until March 1906, and then, owing to adductor spasm, a small tube until the following June, and thus required a little over two years of treatment, which seems to be about the average.

As to the merits, absolute or relative, of the procedures under discussion with us, time is an all-important factor in making possible a decision. No method now in use has been under observation long enough to prove that a condition of stenosis of the larynx apparently cured by it may not at some time return. Such is the history of other strictures, and such the result of experience in cases observed of this class.

Some interesting questions arise as to whether attempts at treatment made according to the methods now in use may not in themselves lead to future troubles. In other words, will cases which have been thus treated for stenosis show at subsequent periods of the patient's life a tendency towards any special form of accident? Most especially, will they or not be likely to suffer in undue proportion from degenerative changes in such tissues as may remain to them in the interior of the larynx?

The lapse of at least a number of years will be necessary to demonstrate the attainment of permanent cure and the relative immunity from undesirable remote effects. Even then the only approach to certainty will be gained from the study of considerable numbers of cases up to the very end of life.

The management of these cases by any of our present methods is trying and more or less dangerous, difficult enough for both patient and surgeon to cause every one of us to heartily welcome any new suggestion giving promise of better things.

DISCUSSION.

Dr. Emil Mayer (New York) said: I shall premise my remarks by stating that intubation in the adult is performed with the aid of the mirror in most cases, and is for the laryngologist by no means a difficult procedure. My own experience consists of three unusual cases of stenosis of the larynx, in all of which tracheotomy had been performed, and all would have been doomed to a life of breathing in this way, had it not been for the success of constant divulsion and pressure exerted by the presence of an intubation tube. Each one of my patients fully recovered, I am glad to say, but as they were among the first to be so treated, there were many days of careful watching lest recurrence set in, and in one the ordinary methods of intubation failed, and I was compelled to originate a method of slow intubation in order that during the introduction of the tube my patient should not become asphyxiated. In this case (the first one) the stenosis was so great that it required nearly ten minutes' time to successfully introduce the tube, a time far too long for the patient whose air supply was completely shut off. To meet this contingency, I devised a hollow introducer (which I here exhibit), consisting of a hollow handle, with a spring externally along the shaft. The lower end has a pin fitting into the head of the tube. During the introduction the patient breathes constantly through tube and handle, and when the intubation tube is firmly in the larynx, one push of the spring separates the tube from the handle. It has worked very well in my hands, and is applicable to any sized adult tube. It was made for me by George Ermold, of New York City. Some of the patients on whom tracheotomy has been done expel the tube promptly, or within a few hours. This may be due to the pressure from the stenosis, to an unusually large larynx, or to the violent retching which follows intubation at times. To prevent the expulsion of the tube John Rogers, jun., of New York, has devised a screw attachment which enters the tracheotomy opening and is screwed into an opening made in the tube directly opposite the tracheal opening, as described by my colleague, Dr. Delavan. To have this opening exact the patient is intubated with a tube of proper size, the tracheal opening is cocainized, and a heated wire is inserted touching the tube. This is done several times, the patient extubated, and the number of small indentations show the exact place for making the proper opening in the intubation tube. With the tube in readiness, the patient is again intubated, the screw piece attached, and now no possible chance of extubation exists until we so decide. I have found these tubes well borne; patients soon learnt to take food with little discomfort, and the tube was not removed within a fortnight. It was then cleansed and reintroduced. The three cases so treated wore the tube six months, three months, and one month respectively.

The first case was that of a young soldier of the United States Army, who was shot in the right temple while lying on his abdomen at the battle of El Caney on July 2nd, 1898. The wound was declared to be a glancing wound, but he was conveyed to New York City, where his dyspnoea became urgent and tracheotomy was done. Six months after being shot he was placed in my care. I found a narrow slit only within his larynx, but noticing a large opening on his right soft palate, I concluded that his laryngeal obstruction was due to an injury to his thyroid cartilages.

The bullet entered the right temple, ploughed through the superior maxilla, cut out a portion of his soft palate, comminuted his thyroid cartilage, entered the oesophagus, where, being spent, it dropped into his stomach, and was passed from his bowels six weeks later. After frequent application of Schroetter's tubes I began the slow intubation previously described, and he wore his tube for six months. He was then extubated, and remained well for a fortnight. In an attempt to remove some tissue from his larynx he became very dyspnoeic, and I was compelled to do a tracheotomy instantaneously.

This patient never permitted me to again introduce an intubation tube, though I considered him quite well, and I fear that the larger pension he might receive while wearing a tracheotomy tube was a determining factor in this case.

The second case was that of a young woman who had a post-typhoid perichondritis, on whom I had to perform a tracheotomy in January, 1903. She was subsequently intubated, wore her tube (without the Rogers attachment) for three months, during which time she made a transatlantic voyage, and on her return was extubated, and has been well since.

The third case was that of a young man who had been operated on for granuloma of the larynx in December, 1907. There was a return of granulation tissue, and the patient was placed in my hands in January, 1908. He promptly forced out the tube until the Rogers attachment was applied. He then wore his tube continuously for a month, when he was extubated, and he has remained well since then (March, 1908).

I feel that I can confidently claim that as a result of this method of treating these cases laryngology has reached a higher plane, and we become, as we should be, skilled adjuncts to our colleagues the surgeons in bringing dubious cases to a happy ending. Before concluding I wish to thank you, Mr. President, for your courteous invitation to be present and partake in your deliberations and discussions—one which is the more readily accepted that I might express in this beautiful city of Ireland a sense of our deep obligation to the great aid to suffering humanity occasioned by the genius of an Irish-American, a man whom it was also my pleasure to know, whose modesty, gentility, and high character made for him hosts of friends, and whose memory will be ever venerated.

Dr. LOGAN TURNER (Edinburgh) desired to express his thanks to his foreign colleagues from the United States and Belgium for their valuable contributions to the discussion. He could not fail to be struck with the fact that of the two lines of treatment which had been discussed, the intralaryngeal or intubation method of dilatation had been dealt with by the American speakers, while the external cutting operations had been lauded by the Europeans. It was only natural that the influence of O'Dwyer should continue to make itself felt in the land of his birth. Dr. Turner felt that an objection to the dilatation method of laryngeal stenosis by O'Dwyer's tubes was the prolonged period over which the tubes had sometimes to be worn, extending even over five years. He would like to know if Dr. Delsaux had had any experience with the complication of oesophageal fistula in his cases of laryngo-tracheoscopy. Dr. Turner had had that complication to deal with, and the maintenance of the lumen of the trachea had been to some extent interfered with in consequence. In cases of post-operative cicatricial stenosis following laryngo-fissure, he thought that fibrolysin might be employed locally.

Mr. HAROLD BARWELL (London) said he had some diffidence in attempting to speak with authority on that subject, as his experience in the treatment of those cases was limited to two, one of which was being treated by laryngostomy, but it was too recent to relate. He wished to refer to what he preferred to call the "intermittent" treatment by means of Schroetter's bougies, by which he treated his first case. She was a lady aged 25, in whom the cords were completely adherent as far back as the vocal processes. Her original condition could not be exactly judged, as a thyrotomy had been previously unsuccessfully performed for removal of the scar. He divided the scar with a specially made knife; it was composed of dense fibrous tissue, cutting like cartilage. He then passed Schroetter's bougies daily for three months, and later at lengthening intervals. The tracheotomy opening was closed at the end of six months. It was now two years since the dilatation was commenced, and, though he saw her at intervals of six to eight weeks, there was no tendency to recurrence. The length of time was, of course, insufficient to pronounce a complete and permanent cure. One reason why he, and perhaps others, had been somewhat shy of the intubation method was that he had been under the impression that the tubes must be removed, cleaned, and reinserted at frequent intervals, for example, every four days; but now they heard that the tubes might be left in place for six weeks or more, the method would be doubtless rendered more generally applicable.

Dr. SCANES-SPICER (London) said that cases of chronic laryngeal stenosis could be grouped into those that were very easy and yielded at once to simple treatment and those which were almost impossible to cure. He had succeeded by incision with Mackenzie's knife, with Whistler's cutting dilator, and with laryngeal punch forceps. On the other hand, he had had cases requiring repeated operations and introductions of tracheotomy tube, sometimes lasting over years, and finally having to be abandoned wearing the tube, because the patient felt safer and happier that way. He was one of the first in England to buy a set of O'Dwyer's tubes and give them a trial in cases of acute laryngeal trouble which would otherwise have required tracheotomy. He had given them up for these cases, because the tubes got coughed up, and tracheotomy had to be done after all. He had also used them in an obstinate case, 18 years of age, of laryngeal stenosis due to laryngitis chronica hypoglottica after typhoid fever, and for which tracheotomy had been done. No bougie or metal or vulcanite O'Dwyer tube could be insinuated through the obstruction, and after attempts with different instruments laryngo-fissure was done, and a dense cartilaginous mass of fibrous tissue found reaching from the laryngeal ventricles to the tracheotomy wound, and involving the vocal cords, which, being embedded in the thickened mass, could not be distinctly made out, even when the larynx was opened. Having dissected out the growth, he had inserted the largest vulcanite O'Dwyer tube he had, 3 in. long. Its lower end, however, protruded through the large wound in the neck, and was not long enough to pass below the tracheotomy wound. He therefore attempted to keep the new lumen open by bolting in a Schroetter's tin bougie with the old tracheotomy tube. After this had been in some days he again tried intubation, but the tube was coughed up. A special new long tube adapted to the curve of the trachea had been ordered, and was to have been inserted next day, but dyspnoea supervening at night, the nurse hurriedly inserted the old tracheotomy tube. Further attempts were made later with such success that the patient was able to leave the hospital with the tracheotomy wound healed and breathing easily through his larynx. This lasted weeks or months, But later he returned, and an emergency tracheotomy was done by the officer on duty, and the same sequence repeated; he had forgotten how many times that had happened, but it was more than three. That case had made a powerful impression on his mind, for after many months' work the case had to be finally abandoned wearing a tracheotomy tube. Rogers's tubes shown that day by Dr. Bryson Delavan clearly had many advantages over the old O'Dwyer, and the results described were very encouraging. He should bear them in mind if a suitable case occurred. Another very interesting case was that of a bowler at Lord's, who got his sternum fractured by a cricket-ball and driven into his trachea. Minor recurrent troubles went on for years, and finally there was urgent tracheal stenosis with severe pulmonary complications. Tracheotomy was done, but the stricture was too low for any instruments then at his disposal to divide or remove it, and the grave condition of the patient prevented long attempts or deep anaesthesia. It would have been quite an easy case if Brüning's bronchoscope and other instruments had been available. He was very interested in the remarkable successes which had attended Professor Delsaux's methods, and was very glad to hear him speak so strongly as to the importance of the re-education of respiration. He himself had been insisting for some years on the share taken by vicious breathing habits and undue negative pressure on the persistence of chronic congestions in the air tract, and the recurrence and obstinacy of inflammatory states. He thought it not improbable the reason Dr. Emil Mayer's case declined reintubation was the same as his own; such cases are more comfortable with the tracheotomy tube, and the fear of asphyxia makes them neurotic.

The PRESIDENT (Dr. St Clair Thomson) said that the debate had not been extensive because of the want of use in this country of the various tubes shown. However, there were some lessons that they could carry away with them —for example, the sufficiency in certain cases of a simple low tracheotomy, which was not always possible; also, the length of time the tubes could be left in the larynx. In this country they were mostly used in fever hospitals. He would like to know the cause of the fetor of the breath which occurred in the case of some children, even within a few days. He thought that marked cases of stenosis resulting from tertiary syphilis were hopeless. He considered that O'Dwyer's tubes did all and more than Schroetter's could do, and that the latter method would fall into disuse. He also considered that laryngotracheostomy held out great promise. He gave an account of a little girl whose larynx and trachea and its upper part were now atrophied, who could only speak with a laryngeal voice, and who could neither read nor write. The rescue of such cases he considered of great social importance. He instanced a case which showed the importance of waiting before doing any cutting operation, as the trachea would itself expand as a child grew older if the larynx be freed. He would like to know whether the larynx was ultimately buried by a smooth secreting surface, and whether the after-treatment was not very long and trying.

Dr. DELAVAN, in reply, showed a knife hidden in a dilator, which he used for stricture of the anterior commissure. Intubation, like any other high art, could not be taken up and mastered in a day, so that few of them could become proficient in its use; and in New York a few took it up and the others referred such cases to them. He considered that all cutting methods should be avoided if possible, although the new methods advocated that morning offered advantages which did not exist with the older cutting methods; but the ultimate results could not

be tested for a considerable time, and they did know the ultimate value of intubation used with skill and patient persistence.

Dr. V. Delsaux, replying to the President, said the post-operative treatment included dressing wounds during a few weeks, and a stage of dilatation for three months or more. This latter stage had been much diminished since the excision of scar tissue had been substituted for mere incision in the median line. All the cases reported had undergone the operation a year or more previously. Many of them were healed, and in the others the plastic operation still had to be performed. As for secondary stenosis of the trachea after closing the tracheal fistula (as reported by Dr. Logan Turner), one might perform resection of the superior part of the trachea or insert a portion of cartilage under the skin of the neck previous to performing the plastic operation. He did not feel confidence in fibrolysin, which had failed every time he had used it. He made the same objection to the use of *x* rays in cicatricial stenoses. He thought they had a peculiar efficacy upon young cells, that is to say in the stage in which stricture was going to be produced, and at that time patients did not come to laryngologists.

CANCERS OF THE THROAT:

SOME REMARKS ON THEIR SITES OF ORIGIN, PATHOGENY, EARLY DIAGNOSIS, AND RADICAL CURE.

By Robert Henry Scanes-Spicer, B.Sc., M.D.Lond.,
Consulting Surgeon, Diseases of the Throat, St. Mary's Hospital, London, W.

Necessary limits of time and space for a sectional paper compels selection of a few principal points only for mention. For the purposes of the present paper "cancer" means non-congenital primary carcinoma. The term "throat" is not used in an exact anatomical sense, but as one of practical and clinical convenience to include those areas which come under the constant purview of experts perpetually examining the upper air and food passages. Hence not only the larynx, but also the mouth, tongue, palate, fauces, tonsil, oro-pharynx, naso-pharynx, hypo-pharynx, oesophagus, trachea, thyroid, and neck may have to be considered.

In the past the interest of the clinician has been perhaps too keenly fixed on cancers of the larynx. This has been necessary to bring some order out of chaos and to demarcate a distinct group of cases characterized (*a*) clinically by early persistent hoarseness in middle-aged persons; (*b*) anatomically by the limitation of cancerous degeneration to the vocal cord area, and (*c*) surgically, by the probability of radical cure by laryngo-fissure or partial laryngectomy. This task has been the *magnum opus* of Semon and Butlin in chief. Among the problems that immediately face us as specialists are two very important ones. First—a scientific one—to see what, if any, light can be thrown on the broad question of the nature and origin of cancer from its study in the throat areas; and, secondly—a practical one—to secure precision in early diagnosis, and perfect a technique for radical cure in cases other than the so-called intrinsic laryngeal variety—that is, more especially those cases in which there are derangements of swallowing, pain, haemorrhage, ulceration, or recurrence of vague throat troubles of a chronic and persistent nature.

Important as has been the recognition of the limitation of cancer to vocal cord area (intrinsic laryngeal cancer) as the chief criterion for successful operation up to recently, there can be little doubt that the search for "intrinsicness" has diverted attention from other considerations of great importance, such as, for example, the exact anatomical relations of the sites of origin of non-intrinsic throat cancer in the soft tissues with reference to adjacent and opposed hard structures; and also to a large extent in this country, until recently, practical technique of radical cure if the disease were not of the so-called intrinsic localization.

As a contribution to the solution of the above problems, the following propositions are now advanced:

1. The anatomical relations of sites of origin of throat cancers, based on clinical observations, pathological museum specimens, and published records and diagrams of other observers, suggest strongly that these sites of origin (when the case is seen early enough for recognition of such, or the sites at which the maximum or most advanced cancerous degeneration is evident) are in those soft tissues immediately overlying, or anatomically opposed to, or compressed by hard and prominent borders, ridges, spiny processes, bumps, surfaces, or points of bone or cartilage—the latter often ossified in senescence. In criticizing this generalization, the parts affected must be thought of in their natural position and working in the living subject, and not as seen in the cadaver, or in anatomical diagrams, or even in the positions in which the parts are familiar to the laryngo-tracheo-broncho-oesophagoscopist, for such are not the natural ones, and the real natural position can only be ascertained by the mental eye. Radioscopy has not materially assisted me up to the present, one way or the other, in testing of my conclusions, but I am continuing my investigations on these lines.

2. The soft tissues of these areas, though constantly exposed to certain limited variations of incidental mechanical force in the normal working of the human machine, under abnormal augmentation of such force are exposed to such abnormal increase of stress, strain, friction, compression, and torsion that an excessive mechanical stimulus to cell growth ensues, and causes, without the aid of any extrinsic or specific irritant, that *proliferation and penetration* of epithelial cells which is the local histological evidence of cancerous degeneration.

3. In searching for the origin of such augmented mechanical force on general biological principles, such search is likely to succeed if directed to a study and comparison of those forces which in action are *intermittent*, in accordance with Sir James Paget's law that intermission of impressed force causes cell overgrowth. A long-standing action of such abnormal force would also appear to be necessary, or the *vis medicatrix Naturae* would assert itself. In degree such abnormal force also—though in considerable excess of the normal physiological variations with which the soft tissues are adapted to deal—must not be too massive, or it would damage or destroy the vitality of the tissues.

4. A detailed consideration of all the chief sources of mechanical force acting on the body has led to the conclusion that the following are the most important:

(*a*) The force of gravitation.

(*b*) The mechanism by which the body maintains its various postures in opposition to the force of gravitation.

(*c*) The muscular mechanism of respiration.

(*d*) The varying state of distension of the abdominal viscera, by food, flatus, etc., and the elastic recoil of their tissues and other organs stretched by them.

(*e*) The varying energy with which the general nervous and muscular actions of the body are executed.

Each of these factors—and many others—acting either alone or collectively, may produce great variations in the resultant mechanical force, to which the different organs and tissues—and cells in many cases—of the body are exposed for many hours at a time, every day, over many years. This will be seen especially if the action of gravitation and the equilibrium mechanism are thought of; and I would especially insist on the variations due to the different modes of action of the respiratory mechanism. These do not admit of detailed consideration in the present paper, but have been dealt with somewhat more fully in a paper communicated to the Section of Anatomy and Physiology at the British Medical Association meeting at Belfast in July, 1909, and entitled Some Points in the Mechanics of Respiration, etc. The conclusions are, however, that the incident mechanical forces and the resultant stresses, strains, frictions, etc., are much greater when abdominal respiration or *belly breathing* is used, than with costal or thoracic respiration, which I have named *back breathing* (for reasons mentioned in the above paper). The essential points in *back breathing* are that on inspiration the spinal column is as stretched out and as straight as possible. The thorax is raised and expanded, and there is no descent of the diaphragm. Instead, this muscle, acting from a fulcrum formed by the abdominal viscera (which are retained in the vault of the diaphragm by the anterior abdominal wall, passively tightened by the extended spine and raised thorax), further raises and enlarges the thoracic cage at its lowest part. On expiration, the spine being retained in a stretched-out position, the elastic recoil of the lungs and displaced structures is guided and

controlled by an *active muscular contraction* of the muscles of the anterior abdominal wall. In abdominal respiration—belly breathing—however, the spinal column is flexed forward and convexly rounded behind; the thorax is flat and collapsed, the diaphragm descends carrying with it all the thoracic and abdominal viscera and dragging down the trachea and larynx towards the thorax. A protrusion or *heave* of the anterior abdominal wall or, at all events, a felt *push* or *thrust* in the epigastrium takes place on each in-breath. Expiration is a mere elastic recoil not affected, or only triflingly so, by the abdominal muscles which have almost completely lost their power, and sooner or later undergo passive distension with the rest of the structures of the anterior abdominal wall. There is thus in belly breathing, as compared with back breathing, increased compression and irritation of the soft tissues squeezed between the heel of the bezel of the cricoid cartilage and the vertebral column.*

5. On further extending investigations from throat areas to areas of predilection for origin of cancer elsewhere in the body, it will be found that (if not exposed to special extrinsic, though probably non-specific, irritation) they are such sites as have to bear the brunt of the effect of the same excessive intrinsic mechanical forces referred to above. I will merely mention areas of attachment, pressure, flexure, and friction (cardia of stomach, splenic and hepatic flexures, caecum, and sigmoid). At such places the mechanical effects of stretch and pull, due to the resultant action of flatulence, peristalsis, and belly breathing, are likely to be especially intense, and in such places cancer is most common. Likewise areas of irritation, cervix uteri and rectum, which move freely in all belly breathing against faecal accumulations and tip of coccyx respectively. Further detail is not possible on the present occasion.

6. It is universally recognized that extrinsic irritants, such as soot, clay pipe, tar, paraffin, chronic microbial colonies of any kind, *x* rays, inflammatory changes after a blow, or in an old scar, may be local irritants. I have mentioned as intrinsically arising sources of mechanical force abnormal action of the equilibrium and respiratory mechanisms, flatulent distension, elastic recoil of tissues, peristalsis, energy of muscular movements. I should like to add those due to osmosis of fluids, blood pressure, and even the play of expression in emotions. In quadrupeds, perhaps, mechanical forces other than the equilibrium mechanism and gravitation are more potent, but the effect of the respiratory mechanism is probably always considerable. Thus, domesticated animals like pet dogs and cats, which get fat and become belly breathers, appear to become more liable to cancer than similar animals living in a wild state or kept in good training. It is still unsettled whether extrinsic local irritants alone can produce cancer directly without a preceding "primary constitutional cachexia." The local factor may be great and the constitutional small, or vice versa,[1] but can a local irritation of extrinsic origin initiate cancer in a back breather?

7. In order for a local cell overgrowth to become cancerous—that is, invade or penetrate—there is necessary, not only the local irritation, but also (as has been so convincingly argued by Sir James Paget) this primary cancerous cachexia. This view has been confirmed by most clinical observers, especially by those who have known intimately cancerous subjects from early youth to death from cancer in middle age. It is true that this cachexia may be obscure, variable in degree, and indefinite in character; but if one looks back on one's early recollections of those who have died twenty-five years later of cancer, one cannot help acknowledging that there was in most of them, even at that remote period, a tint of skin, a breathlessness, or a posture, which, in the light of later experience, suggest a cachectic state or constitution. It is necessary to examine how the above association may arise. My interpretation is as follows: Backbone breathing demands that the body shall be placed and held in the best possible position in the years of youth and growth to secure the most perfect adult form—that is, the efficient machine. It has been proved by physiological measurements on a large number of trained vocalists, that the quantity of tidal air is 10 per cent. more in thoracic or costal breathing, on the average, than in abdominal respiration.[2] Hence the respiratory process is more adequate; oxygenation and elimination are alike promoted, and all the vital fires burn bright. Moreover, the circulation of the blood is favoured both by stronger thoracic aspiration of blood from the inferior vena cava (on inspiration), as well as by active muscular compression of the abdominal viscera (on expiration), forcing on the blood in the splanchnic area. The chyle and lymph are similarly sucked and squeezed into the thoracic duct, and thence into the blood stream, to enrich its quality and compensate for used-up supplies. The vigorous circulation of highly oxygenated, purified, and enriched blood through the organs of the splanchnic area can only promote to the highest degree the perfection of the digestive processes and the elaboration of those subtle complex and higher products of anabolism which are required all over the body for the perfect performance of the vital processes of the constituent cells. I mean the ferments, internal secretions, alexins, opsonins, etc. There is no intestinal fermentation, flatulence, or toxaemia. Hence the nerve and muscle elements, being bathed in a stream containing all the essential elements for perfect nutrition and action, as well as the other cells and tissues of the body, a high standard of general nutrition and health exists.

On the other hand, in belly breathing, while the respiratory capacity is smaller, the aspirating power of the collapsed and sluggish thorax is less, and the muscular contraction of the abdominal wall nil. The blood hence tends to accumulate and stagnate in the splanchnic area. The abdominal viscera being now supplied with suboxygenated, imperfectly purified, and stagnant blood, cannot perform their digestive functions, metabolic changes, and elaboration of ferments to full efficiency. Hence a state of chronic intestinal decomposition, flatulence, and toxaemia, which soon produces impaired nutrition and vitality, manifested by bad tint of skin, shortness of breath, slackness of figure, and lack of tone, in spite of obesity. There is indeed a real constitutional cachexia, and when long standing, extreme, or advanced such a state is hardly differentiable, if at all, from "primary cancerous cachexia." It is notorious how difficult or impossible it is to decide clinically whether marked states, such as this, in a given patient are to be regarded as aggravated dyspepsia or as early cancer, when no tumour is yet to be distinguished. It is also most highly suggestive that the latest chemical researches on the blood and tissues in cancer show just such derangements as might be expected from such chronic stagnation in the splanchnic area as must occur in bad forms of belly breathing. I will mention a few examples:

(*a*) Absence or diminution of hydrochloric acid in gastric juice (Moore).

(*b*) Absence or diminution of liver ferments in cancerous animals, as compared with healthy animals (von Leyden, Bergell, Stricker, and Lewin†).

(*c*) Excessive alkalinity is one of the chief features of the body fluids in cancer (Moore). In aggravated dyspepsia mineral acids often give the greatest relief. Are the body fluids of such advanced dyspeptics too alkaline? The determination of this might help us.

(*d*) The blood of cancer patients contains irritating alkaloidal substances which act as excitants to leucocytes (Macalister and Ross). In chronic dyspepsia irritating toxins are not uncommonly absorbed from the alimentary canal, causing effusion of leucocytes and lymph into the skin, suggesting irritative poisoning of either leucocytes or vessel walls.

(*e*) Imperfect elimination of nitrogenous matter (goutiness) and of fats (obesity) are common when there is stagnation in the portal area, from overeating and insufficient exercise. In my experience—and I believe it is a general one—both goutiness and obesity are common forerunners and companions of cancer, as would be expected if my theory is correct. It is further supported by the laboratory fact that the chief chemical peculiarity of cancer cells is the storage of glycogen—suggesting that suboxygenation and imperfect elimination of carbohydrates exists. My authority *re* glycogen in cancer cells is Brault, quoted by Powell White.

(*f*) While in charge of the Throat Department at St. Mary's Hospital, several cases of cancer of the throat were studied by Sir Almroth Wright and myself. He determined the opsonic index of the blood with reference to *Bacillus neformans*, and treated with injections of a vaccine made therefrom as a therapeutic agent. This was tried in consequence of this organism having been held to be the specific cause of cancer, to which the

* In another paper by the author, published at page 673 of our issue for September 11th, 1909, will be found engravings illustrating his conceptions of the mechanism of respiration and the views here stated.

† They concluded that the normal organism contained a specific hydrolytic ferment, deficiency of which permitted the growth to increase.

blood resistance was deficient by reason of absence of certain obscure protective substances. One case received great benefit; at least two others appeared to receive temporary benefit, and five or six others (either hospital or private patients) no benefit at all. All were cases which were quite inoperable, or for whom surgery had done its utmost. No case was cured. The conclusion we came to was that the vaccine only relieved some of the secondary infective processes of the cancerous growth, but had no influence on the latter itself. I am justified in concluding at all events from these observations that the blood of cancerous patients is at all events deficient in certain substances which should protect the organism from bacterial invasion. I should, however, mention that all these were advanced cases of cancer in which a secondary cachexia might have been produced by the growth, and therefore not a feature necessarily of primary cachexia.

(g) *Toxicity of Cancerous Extracts.*—At a recent meeting of the Society of Biology of Paris, Madame Girard Mangin showed that toxic substances were present in cancerous extracts obtained from tumours which had not undergone suppuration, and were treated aseptically. Animals which did not yield at once to their action became ill, and died in a state of profound anaemia without appreciable lesions.

8. The balance of evidence appears decisive, to those best qualified to judge, against cancer being due to any specific extrinsic parasite or microbe. I have myself studied the appearances of forms stated to be the parasites of cancer. They are certainly remarkable, but experts tell me they are capable of other and more probable interpretations. I am myself adverse to any hypothesis of a parasitic origin for cancer, in that the natural history of the disease is so widely divergent from all other parasitic diseases. To my mind cancer is a biological syndrome or symptom complex which may be caused without any extrinsic specific parasite or irritant, by intrinsically arising mechanical forces, which are excessive in degree when the muscular mechanisms of the body, and especially those of equilibrium and respiration, are chronically used other than to maximum or, at least, very high efficiency. In such cases the increased friction, stress, strain, compression, etc., lead to mechanical irritation and undue stimulation of cell growth, the power expended unproductively being transformed into the energy of cell-growth and multiplication. This is the local irritation factor. This alone is not cancer. Now the very same low efficiency use of the muscular mechanisms (especially those of equilibrium and respiration) which have caused local irritation (much power lost and wasted in doing internal work), also result in impaired oxygenation and purification of the blood, defective aspiration and compression of the blood out of the portal area, and a general state of splanchnic stagnation, intestinal toxaemia, and non-elaboration of essential internal secretions, alexins, opsonins, and ferments. Perfect cell tissue and blood vitality is impossible. Thus arises a *cachexia*, which may precede or follow the local epithelial proliferation. Until both epithelial proliferation and cachexia are at work there is no cancer; the biological syndrome is not yet complete. When *both* are at work each process reacts on and intensifies the other. Each manufactures its own poisons in ever-increasing bulk, and so the biological syndrome advances to the fatal end. Such is the view of the nature and origin of cancer that I have been led to form. I believe it is new. It is not impossible that some one may have wildly hazarded as a shrewd guess, or a pious opinion, that breathing, or bad postures, may be connected with the production of cancer. So has every other thing under heaven. But I do not think that such a statement has ever been seriously examined, much less supported by a chain of arguments, in agreement with the experimental and clinical facts of the disease, and forming a logical and consistent interpretation of the natural history of the disease, such as I have now attempted to outline in the briefest and most imperfect way.

The next point in my paper is that of early diagnosis of the disease in the throat areas. With reference to early diagnosis, the *Lancet* in a leading article (p. 1617, June 5th, 1909) has stated: "It would be far better that even a large number . . . should seek medical assistance unnecessarily in the fear that they may have cancer, than that, as happens at the present time, a still larger number should delude themselves with the hope that the symptoms they are suffering from are of no importance." This opinion every experienced practitioner—and no one more than the throat specialist—will cordially endorse. Having for many years examined all chronic throat cases in adults from the point of view of the possibility of cancer, and having brought forward several doubtful cases and seen those of others at the Laryngological Society ever since its foundation, I am well aware of the difficulties and anxieties that so often beset suspicious lesions in the throat areas, although diagnosis and right course of action are as clear as daylight in other cases. The question of early diagnosis is brought forward in the present paper for two reasons: (1) The time appears to be now ripe for an extension of special vigilance in throat areas to other symptoms than that persistent hoarseness that is so conspicuous in cancer of the vocal cord area. Equal attention should be paid to other persistent chronic irritations in other commonly hidden regions of the throat. Pain, haemorrhage, soreness, burning, smarting, difficulty of swallowing, food sticking and going the wrong way, regurgitation, choking, and even our old friend "globus hystericus," for it is indeed quite possible for even an hysterical patient to have cancer or some structural throat trouble—if chronic in duration—should be relentlessly tracked to their source. (2) The recent development of endoscopy, especially in Brüning's oesophagoscope and bronchoscope, and of hypopharyngoscopy and also improved radioscopy, render it practicable for a modern expert to make a much more efficient and complete examination of the throat and gullet than was possible by merely looking down on the larynx with a laryngoscope and blindly using a bougie. By hypopharyngoscopy two-thirds of the back of the cricoid—formerly inaccessible to direct vision—can now be studied at one's leisure, and cancer there—or its absence—definitively proved. Again, with the oesophagoscope every bit of the oesophagus, in many cases down to the stomach—at all events, down to a stricture—can be explored with the eye, and the nature of such a stricture ascertained, so well as treatment, efficiently carried out by dilatation, radium, or other measures which may seem advisable to the expert. Similarly, the *subglottic* and *internal* aspect of intralaryngeal tumours can be peeped at, and if the appearances favour malignancy, such tumour can be completely excised at a much earlier stage than one would previously have been justified in urging a radical operation, such being easier and safer in proportion to the smallness of the growth. Personal experience has taught me, however, that the examination of malignant ulceration and stricture of the hypopharynx and upper end of the gullet is a very different matter to the examination of normal subjects, and sometimes in attempting to make a complete examination of malignant oesophageal cases referred to me by some of my surgical colleagues at St. Mary's Hospital, when I used only Killian's long tubes, I found it was not always possible even under general anaesthesia to do so without using force which I should consider dangerous. Brüning's shorter and extension tubes have enormously facilitated matters, and the increasing experience that is being acquired on all sides will greatly extend the value of oesophagoscopy. I still think that an irritable or stenosed or cancerous hypopharynx, or oesophageal mouth, at the lower level of the cricoid, demands great skill, and should be treated with a sense of great responsibility. Indeed, in those cases in which completeness of examination is most essential, the examination partakes rather of the nature of an exploratory operation under anaesthesia and should be approached as such by all parties concerned. This opinion may be punctuated by the fact that I am aware, on indubitable authority, of grave results having immediately followed oesophagoscopy in more than one case. These examinations, then, should not be undertaken in the light and airy way in which they have been written about, as mere easy trifles.

The fourth and last point with which I have to deal in this paper is the question of radical cure. In this country the technique of laryngo-fissure for intrinsic (vocal cord area) cancer has been perfected by Sir Felix Semon and Mr. H. T. Butlin, and recent results are equal to the best in the whole surgery of cancer. For success, however, the disease must be intrinsic, that, is still confined within the cavity of the larynx—the vocal cord area. My own personal experience of intrinsic laryngeal cancer is comparatively small, whereas my experience of cancers of the throat is unusually large. This paradox is explained by the fact that scores of cases of throat cancer are seen by hospital throat surgeons, to units in which

the disease is confined to the larynx. I have found it not at all unusual on first inspection of a hospital patient, to find the tongue, the throat, epiglottis, larynx, and gullet all deeply involved in cancerous degeneration. These more extensive and spreading cancers of the throat have on rare occasions appeared to justify an attempt to totally excise the invaded larynx and other affected parts. In combination with one or other of my surgical colleagues at St. Mary's Hospital such extensive operations have occasionally been performed at request of the patient as a last chance. The results were not successful, and for some years this class of case has been regarded as better left alone. During the last five years, however, under a new lead from Professor Glück of Berlin (with whom his throat colleagues cordially collaborated), complete extirpation of the larynx and affected adjacent parts of oesophagus, pharynx, tongue and secondary glands has been revived with remarkable success—a success due chiefly, it appears, to the trachea being brought out of the neck wound, and sutured to the skin after the method originated and carried out by Solis Cohen of New York. This procedure shuts off the air tract from the septic pharyngeal cavity, and the pneumonia which used to carry off the patient no longer occurs. Some of Glück's complete extirpation cases have lived for years, able to do their work. Two or three he has shown at the Laryngological Society of London, and five at the International Congress of Laryngology in Vienna in 1908. While laryngo-fissure and partial laryngectomies are, in my opinion, likely to be better performed by the laryngologist, these more extensive operations will usually require the collaboration of the general surgeon and laryngologist. This is the course that I commend and shall adopt in the future as in the past, since these massive operations require a technique of a different nature to that which the laryngologist is perpetually using. On the other hand, diagnostic refinements and therapeutic aids not familiar to the general surgeon are at the laryngologist's finger ends. These different "skills" can but seldom, if ever, be combined in one man, and the patient's interest and scientific advance indicate collaboration. By earliest possible diagnosis and earliest complete eradication of the local manifestation of cancer, to which I believe should be added the treatment of the constitutional cachexia and intrinsic mechanical sources of irritation in the light of the views enunciated by me, on the nature of cancer in the earlier part of this paper, I think we are within sight of a much higher proportion of successes than has existed up to the present time, in radical cure, that we have a new indication for the avoidance of "recurrences," and that prevention is not beyond the bounds of possibility.

References.

[1] Sir James Paget's Law of Compensation, Lectures on Surgical Pathology, 1870. [2] Joal, also Pollard, *Journal of Physiology*, Cambridge, March, 1890.

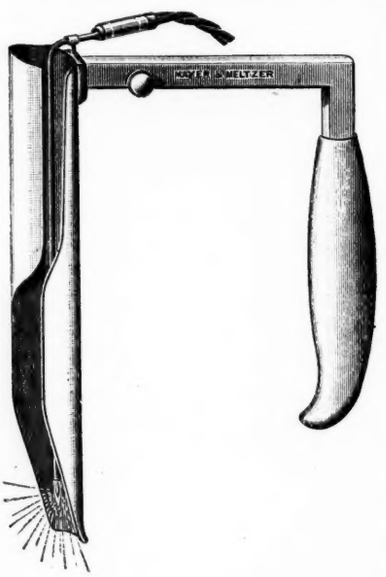
DEMONSTRATIONS.

I.—Radical Frontal Sinus Operation.

Dr. Watson Williams (Bristol) demonstrated on the cadaver the method of performing the radical operation on the frontal sinus and ethmoid cells which he had devised. He showed the different stages of the operation, and demonstrated the steps as he proceeded, pointing out the dangers of entering the cranium through the olfactory plate, and the means of avoiding them which his operation gave by giving a full view of the whole field and by keeping external to the upper attachment of the vertical plate of the middle turbinated body. The operation consisted in the formation of an osteoplastic flap, which was turned outwards to enable the interior of the nasal passage to be seen and treated accordingly. The ethmoidal cells could be removed, and no pockets were left without inspection, as in the case of Killian's method, and there was practically no deformity as a result. The first step was to take a radiograph of the frontal sinuses to see their extent, as they were entered from the anterior wall. The first incision was made through or immediately beneath the eyebrow, the corner end curving slightly downwards to the centre of the root of the nose. It should not go through the periosteum. This cut was subsequently prolonged vertically downwards in the middle line to the lower end of the nasal bone. The soft tissues were retracted and the periosteum incised and reflected as much as necessary to enable an entrance to be made into the frontal sinus at its inner and anterior aspect. As much as required of the anterior wall and floor of the sinus was then removed. The subsequent prolongation downwards of the incision at its corner end was then made, the knife being carried right through the periosteum to the bone, and at its lower end was pushed through into the affected side of the nose just external to the septum, and made to cut upwards as far as it would go, the remainder of the nasal bone being severed with a specially bent saw right on to the frontal sinus above. A slightly curved incision of about half an inch in length was then made through the tissues down to the bone, just beneath the inner end of the lower orbital margin of the same side, its inner end commencing just in front of the anterior lacrymal crest; the lacrymal sac was turned outwards, and an opening here made into the nose. By means of a bent probe-pointed saw or a Gigli this opening was connected subcutaneously above with the opened frontal sinus, and below, also subcutaneously, through the same opening the nasal process of the superior maxilla was divided. This freed the osteoplastic flap, consisting of the nasal bone, the nasal process of the superior maxilla, together with that small piece of the frontal bone which articulates with the nasal process of the superior maxilla. The facial artery which nourished the soft tissues of this flap was intact. The flap was then turned outwards, and the interior of the nose and the anterior ethmoidal cells were brought into view. These latter could be removed, also the posterior cells, and the sphenoidal sinus entered freely if necessary. The important point in these further proceedings was to keep external to the middle turbinal, a small portion of which should be left as a guide. The flap was then replaced, the bone fixed if necessary, and the operation concluded. A good forehead illumination was essential.

II.—A Direct Vision Operating Laryngoscope.

Dr. William Hill (London) demonstrated on a boy a new pattern direct laryngoscope resembling Jackson's instrument, in that it was fitted with a small lamp for distal illumination, as originally devised by Einhorn. Its special feature was the largeness of the lumen, the cross-sectional area being nearly three times that in either Jackson's, Killian's, or Brünings's instruments. The increased calibre of the tube (really a slit tube) enabled large-sized forceps and other instruments to be employed within the larynx without obscuring the field of vision. It had been found possible, Dr. Hill said, to remove a tuberculous arytenoid cartilage entire, and large pachydermatous and other tumours. The lateral slit was to facilitate the introduction of a tube containing radium into the upper third of a cancerous gullet when the instrument was used as a deep pharyngoscope. It had the further advantage of possessing a detachable handle, so that the spatula could be inserted into Brünings s hand lamp if proximal illumination were preferred, or should the distal method of illumination fail. The instrument was most usefully employed in the direct removal of large growths under general anaesthesia, but, in spite of its bulk, the spatula could often be used under cocaine anaesthesia—a point sufficiently proved by the fact that its practicability was demonstrated on a youth of 17 only slightly cocainized. The illustration is half-scale.



III.—Hay's Pharyngoscope.

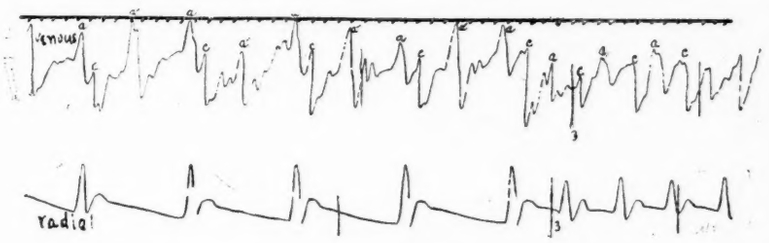
Dr. Bryson Delavan (New York) demonstrated Hay's pharyngoscope for examination of the posterior nares and larynx. The instrument was based upon the principle of a cystoscope, and consisted of a vertical shaft, which served as a handle, and a horizontal portion, which served as a tongue depressor, the distal portion of which contained a small lens and electric lamp, the light being conducted along this to a suitably arranged eyepiece in the manner of the cystoscope. The small lens could be rotated, so that any portion of the naso-pharynx or larynx could be examined. It was most useful for cases where the mouth could not be opened, or where the patient was lying in bed. Of course, it was of no service for operating purposes. It was made by the Wappler Electric Controller Company, New York.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE ORIGIN OF THE PRESYSTOLIC MURMUR.

In reference to the nature of the origin of the presystolic murmur the following observation has been made: A patient who has for a considerable time been under observation and treatment for mitral stenosis showed constantly in his venous curve a long *a-c* interval. During his last failure in compensation he was brought into hospital, where tr. digitalis was administered to him. After a period of about two weeks, analysis of his venous pulse curve together with his radial demonstrated that incomplete 2 in 1 heart-block had been produced. Auscultation at the apex revealed the fact that when the heart was beating regularly a presystolic murmur was always heard. During the periods when the ventricles



were silent the murmur corresponding to the presystolic murmur persisted, and was synchronous with the wave a^1 in the venous curve. It was clear that this auscultatory phenomenon occurred in a cardiac cycle in which there was a silent period of the ventricle, seen in the pulse curves. It seems justified to conclude that the auricle, which alone was beating, was responsible for the production of this presystolic murmur. Not only were the heart sounds wanting, but the systolic and diastolic murmurs which are features in the auscultatory signs in the case were absent in the cycles noted.

In the figure simultaneous tracings of the jugular and radial pulses are given. The uppermost line records intervals of one-fifth of a second. The waves *a* and *a'* represent contractions of the right auricle. The waves *a'* are not followed by waves *c*, nor are the waves *a'* represented by a following radial pulse.

New York. Alfred E. Cohn.

ACUTE MYELITIS FOLLOWING MEASLES.

The patient, S. E. G., a boy aged 9 years, had been suffering from a febrile illness, with coryza and cough, followed by a blotchy eruption of face and body. There had been many cases of measles near his home. On the fifth or sixth day medical advice was sought on account of pain and weakness in the legs; he was unable to stand when helped out of bed, and, though he had been held up, had been unable for more than twenty-four hours to pass water.

When first seen he was lying on his back, with the legs partly drawn up, and the knees toward the right side. He was restless and irritable, with hurried respiration and frequent cough but no expectoration. There was a fading rash, typical of measles, on his face and in his mouth, less on the trunk; Koplik's spots were not seen. The tongue was furred, the temperature was 101°.

The lower ribs did not move and the lower intercostal spaces were drawn in during inspiration. There were no signs of diaphragmatic paralysis. A few rhonchi and moist sounds were heard, more at the back and towards the bases. The heart was normal. The bladder was tense, reaching considerably above the umbilicus, and urine was slowly dribbling away. About two pints were removed by catheter, and the patient felt much easier, but still complained when any movement involving the left hip was attempted. The bowels were opened involuntarily; he usually knew when he wanted to pass a motion, but had scarcely any power to retain it. There was no girdle sensation, but almost complete anaesthesia over the greater part of the abdomen; the point of a pin could just be felt when used forcibly; knee-jerks and plantar reflex were absent, and ankle clonus was not obtained. There was complete paralysis of the lower limbs, except that he was able to move some of his toes very slightly. There was no sign of disease of the cranial nerves, and the upper limbs were not affected. Some redness was observed over the left sacro-iliac joint when first seen (he was often soiled by discharges), and in about thirty-six hours a bedsore, 1 in. by ½ in., developed. The boy lived in a small cottage, and the nursing was at first very inadequate, but when carefully nursed later, on a water bed, the sore gradually healed.

He was catheterized for sixteen days, after which time he began to micturate normally. Improvement in movements of the toes was noticed twelve days after he was first seen, followed quickly by improvement in the intercostal paralysis, which gradually cleared up before the boy could move his legs. A month from the onset of paralysis he could walk a few steps when held up, and subsequently improved rapidly, until, a month later, he could walk and run, though his movements were rather clumsy. At the onset of paralysis the boy's lower limbs were flabby and slowly wasted, but improved gradually with the recovery of movements, until they ultimately reached their normal firmness. The boy made a complete recovery; there remained no tremor or inco-ordination, no cranial nerve trouble, or mental change.

Beyond the treatment already mentioned, the boy had electrical treatment for the bladder, abdomen, and lower limbs, and, as regards drugs, was at first given a mixture containing potassium iodide and compound tincture of cinchona in moderate doses, later nux vomica, and finally Easton's syrup.

The boy's family history was good, and there was no history of syphilis in either parent.

J. H. Busteed, L.R.C.P., L.R.C.S., L.S.A. Lond.,
W. M. Sadler, M.D., B.S., M.R.C.S., L.R.C.P.

A CASE OF MYATONIA.

A girl aged 7 years was admitted recently into the Manchester Children's Hospital with flaccid paresis of all the limbs and trunk. The child lay helpless in bed and had not power enough even to sit up. All the muscles were very much wasted and very flabby, but she could just move each limb though with very little power.

According to the mother the child had been in this condition all her life, and had never been able to sit or stand up. The knee-jerks were absent, but the quadriceps muscle was so weak that this was not surprising; all the other reflexes were normal. The urine and faeces were held and passed normally. There was no spasm or ataxia, and the muscles reacted normally but weakly to electricity. Sensation was normal, including that to heat and cold. The sight was fairly good, and the discs, pupils and external eye muscles were normal. Mentally she was a fairly sharp child, but the head measured only 19 in. in circumference.

There was no history of any specific disease; she was the fourth child, and no relation had ever had any trouble like this. There was no spinal caries and she has never had any fits.

The case seems to be a congenital myatonia, somewhat

allied to Thomsen's disease, but presenting no rigidity of the muscles. I have to thank Dr. Hutton, physician to the hospital, for permission to publish the case.

HUGH T. ASHBY, B.A., M.B Camb., M.R.C.P.Lond.,
Late Resident Medical Officer, Manchester Children's Hospital.

A CASE OF VERONAL POISONING.

A LADY aged 40 was found lying on her bed unconscious at 6.30 p.m. Her pulse was 104 and very feeble, the temperature normal, the pupils somewhat dilated; she was quite comatose, and died about 11 p.m. A *post-mortem* examination showed a white powder in the stomach, and, judging from the quantity and the number of tabloids that had disappeared from a small bottle found, she had evidently taken twelve to fourteen tabloids, each containing 7½ grains.

Brighton. H. HAVELOCK DAVIES, M.B.

MEAT BONE IN LUNG: RECOVERY.

ON March 19th, 1908, while eating lunch with me, a gentleman, who is accustomed to bolt his food, suddenly began to cough violently. The tears streamed down his face, but he was able to say, "I have swallowed a bone the wrong way." We were eating Irish stew in which were some pieces of bone. The patient left the room and lay down upstairs for a few minutes. He was able to go out afterwards, but did not eat anything at tea and very little at dinner. From this date a violent spasmodic cough, which was put down to bronchitis and emphysema, commenced. The cough continued, in spite of treatment, for eleven months.

Two or three consultations were held, but there were never any signs pointing to the presence of a foreign body in the lungs until the patient, who is 67 years old, caught a chill (?). His temperature became elevated on March 31st, 1909, and he developed symptoms of pleurisy and localized pneumonia on the right lower base. Expectoration was fetid, he lost flesh rapidly, had a hectic appearance and temperature, and, later, rusty sputum. However, when things looked serious, he suddenly coughed up the piece of bone, ½ in. long by ¼ in. wide, having sharp edges. After this the temperature at once fell, the pneumonia and pleurisy rapidly cleared up, and he is now enjoying his usual health except for a slight cough at times.

H. G. MALLAM, M.R.C.S.Eng., L.R.C.P.Lond.
Brighton.

DYSTOCIA DUE TO VENTRIFIXATION OF THE UTERUS.

I HAVE read Professor Cameron's paper on this subject in the JOURNAL of October 9th (p. 1036) with the greatest interest. He gives two cases of dystocia. Professor Jacob mentioned three fatal cases. I am in the unhappy position of being able to supply a fatal case of dystocia due to ventrifixation which occurred in my own practice. The following notes were made on my return from the Royal Victoria Infirmary:—Mrs. C., aged 34. Fifth pregnancy. Patient had had the operation of ventrifixation done at the Royal Infirmary, Newcastle, about five years ago. Pains began on September 13th, 1906, but did no good. She was kept comfortable with suitable doses of opium and chloral. The os was high up, but did not dilate till September 20th, when it was the size of a shilling and the membranes were protruding in a sausage-shaped bag. At 11 a.m. on September 21st the os was a little larger and the membranes were ruptured. At 11 p.m. the os was dilating, and cocaine was given, and at midnight I tried to use Milne-Murray's forceps, but could not get the second blade on. I telephoned for a colleague (being by this time pretty well exhausted), and I administered chloroform whilst he tried turning. Finding that to be quite impossible he tried to use forceps, and as this also was impossible he tried to perforate, and again failed. I then suggested Caesarean section at the Royal Victoria Infirmary, Newcastle. She was taken there and the operation done by the surgeon who five years before had done the ventrifixation. The tubes were tied and cut at my suggestion. The uterine wall was oedematous and the cavity stained with meconium. The fetus was macerated. The patient was well after the operation, which took place about 7 a.m. on September 22nd, 1906. She died of shock on September 23rd, 1906, forty-one hours after the operation.

Evidently, therefore, my case occurred over two years before those of Professor Cameron, and it made such an impression on me that I made a decision never to consent to a patient who might still have children having ventrifixation done without the Fallopian tubes being tied and cut at the same time. The condemnation of the operation by Professor Jacob is not at all too strong, and if it leads surgeons to discard ventrifixation in child-bearing it will have done good.

Gateshead-on-Tyne. W. SMITH, M.B., B.S.Durh.

Reports
ON
MEDICAL AND SURGICAL PRACTICE IN THE HOSPITALS AND ASYLUMS OF THE BRITISH EMPIRE.

EAST LONDON HOSPITAL FOR CHILDREN, SHADWELL.

CASE OF SEVERE CANCRUM ORIS: RECOVERY WITH SLIGHT DISFIGURATION.

[Reported by CHARLES MCNEIL, M.A., M.D.Edin., House-Physician.]

History.

L. H., aged 4 years, was admitted on March 15th, under the care of Dr. J. A. Coutts. Never a robust child, she developed whooping-cough six weeks ago, and was much weakened by it. A week before admission she complained of sore mouth, and a number of small, white, shallow ulcers were found on the inner surface of the lower lip, and on the adjoining gum of the lower jaw. The breath was then offensive. Three days later the lower jaw was swollen on the right side, and here the outer surface of the gum was now black, and the teeth were so loose that two were picked out by the child herself. Two days before admission a small black spot was observed on the outside of the right cheek close to the corner of the mouth, and this slowly increased in size.

State on Admission.

A well-grown child, but much emaciated in body and limbs, and in a state of great prostration and cachexia. On the right cheek, just external to the angle of the mouth, was a black spot the size of a shilling, covered with a loose blister of clear brown fluid. This was surrounded by a broad ring of induration, and a wide flush of redness. On the inner surface of the cheek was a corresponding spot, black and gangrenous. A large part of the outer surface of the right lower jaw was bare, and the two molar and the canine teeth on that side were gone. The pulse, 140, was small and feeble, respirations 32, temperature 97.6° F. At intervals there were severe paroxysms of whooping-cough. Crepitations accompanied the breath sounds at both bases, but there was no pneumonia.

Treatment and Progress.

An hour after admission the sloughing gangrenous tissue was scraped freely away by Dr. J. S. Pearson, R.M.O., leaving a clean-cut circular hole in the cheek 1 in. in diameter. Cultures from the gangrenous material gave a pure growth of *Staphylococcus aureus*. To the raw surfaces of the cheek and lower jaw pure carbolic acid was applied. The mouth was frequently washed out with hydrogen peroxide 10 vols. and chinosol solution 1 in 1,000. The child was freely stimulated with alcohol, and tinct. opii miij was given every three hours.

There was no further application of corrosive acid to the raw surfaces. But opium was continued in the above doses for four days. It was then discontinued because of vomiting and irregularity of pulse. During this time and subsequently the raw surfaces in the cheek and mouth remained clean and smooth, without further ulceration or necrosis. On the day after admission a large area of bare necrosed bone on the outer side of the left lower jaw was

found, and the two molar teeth here were absent. To this no application of pure carbolic acid had been made.

The child remained in a precarious condition for several days. She then slowly improved, and in a week was sitting up and taking solid nourishment In a fortnight the hole in the cheek began to contract, becoming elliptical and dragging down the lower lip on the right side. Five

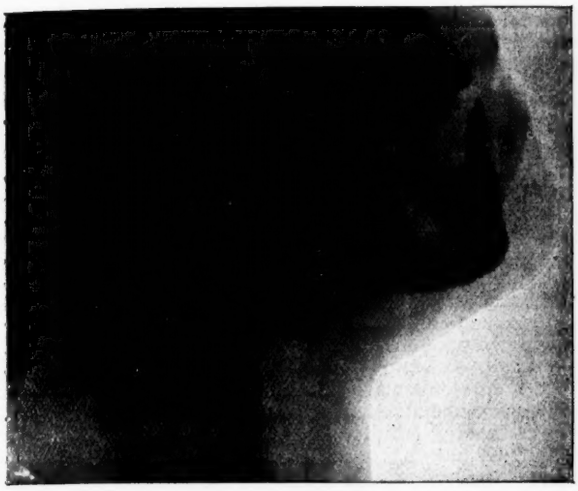


Fig. 1.—Skiagram of lower jaw, showing loss of bone.

weeks after admission the necrosed portions of the lower jaw had separated on both sides, and were easily removed. Both involved the whole thickness of the bone; that from the right side was 1 in. long by ½ in. deep; that from the left was 1 in. by ¼ in.

On her discharge a week later the aperture in the cheek had shrunk to a small fistula only admitting a probe. After three weeks she returned to hospital for operation to relieve the slight eversion of the lower lip. The aperture in the cheek was then entirely closed, and only a small puckered linear scar remained. With the exception of this and the slight distortion of the lower lip, there was a welcome absence of disfigurement.

Fig. 2.—Photograph after recovery, showing cicatrix.

Remarks.

The case seems worthy of record. Recovery from cancrum oris, where there is total perforation of the cheek and extensive involvement of bone, is not frequent. Recovery in such cases without dreadful disfigurement is rare. The happy result in this case may be attributed to the vigorous local treatment by sharp spoon and corrosive acid, and to the powerful influence of opium in checking and healing severe ulcerations in the mouth. I am indebted to Dr. Coutts for permission to report the case.

The National Medical Academy of Mexico has offered prizes to the amount of £1,500 for work on typhus fever. Of this sum £1,000 will be awarded to the discoverer of the actual cause of typhus, or of a curative serum; and £500 to investigators whose work is judged most useful in helping towards such discovery. The competition is open to the whole world. Essays, which must be in Spanish, will be received up to February 28th, 1911.

Reports of Societies.

MEDICAL SOCIETY OF LONDON.

Monday, October 11th, 1909.

Samuel West, M.D., F.R.C.P., President, in the Chair.

Presidential Address.

The President, in his address, dealt with the relation of medicine to the ancillary sciences. He first detailed the work entailed by the medical curriculum of the present day, and then asked, How could all that work be compressed within the five short years of student life? Only, it was clear, by so arranging and mapping out the time that the student might not waste a moment, for he had not one to spare. His whole time was spent in rushing from one subject to another, from one place to another, as he was directed by his teachers, with hardly time to think, and certainly without leisure to digest and properly assimilate what he had been taught. Even then five years was all too short and many students required longer even for the pass examination. With such a hurry-scurry, with so much to do and so little time to do it in, the medical teaching of the present day was, and must be, an organized system of cramming. Cramming was not education. To cram was not to learn. Stuffing might make Strassburg geese; *pâté de foie gras* had a commercial value, but a fatty liver was a disease even in a goose. To be always fed with predigested pap injured the vigour of the animal. The medical student of to-day was largely spoon-fed. If he remembered all he had been stuffed with he would be a monstrosity fit only for a museum. If it were not for his natural robustness of body and mind, his general common sense, his hard work, and the splendid powers of forgetting which he shared with other men, the curriculum would ruin his mental constitution. After all, the end and aim of all this work was to make the student a practical doctor, an object which too often seemed to be lost sight of in the controversies of rival educationalists. So much time was spent in preparing the student to be a doctor, that there was little or none left to make him one. What, then, was the remedy? Obviously to cut down the curriculum until the work required was not more than could be accomplished by the average man in the time allotted to each. Each preliminary subject must be pruned, and all that was not essential ruthlessly cut out. The object was to make a man a doctor, and the doctors themselves were the best judges of what was necessary for that purpose. At present the teachers in each preliminary subject had been allowed to prescribe what they considered necessary for an elementary knowledge of the subject; each had added a little to the mass until the total burden was too great for any but the strongest shoulders to carry. The burden must be lightened. Pathology might be studied in the laboratory by the pathologist, so-called, or in the wards by the physician or clinician. Their objects were the same. They each investigated the problems of disease; their difference was not one of subject or of method, but only of place of study. The pathologist had the advantage that he could determine beforehand the investigation he wished to make, could invent his own experiments, which he could perform at his own time and in his own way—chiefly, of course, upon animals and in his laboratory. The clinician studied morbid man and not animals, could not select his own experiments, but must take them as they came and when they came, and the clinician's workshop was the ward. Clinical investigation in the wards was as much a science as pathological investigation in the laboratory. The same faculties were required in both pathologist and clinician, the same care and skill in observation, the same scientific use of the reason and imagination to create his theories, and the same judgement in putting his theories to the test. Each was the necessary complement of the other. The theories of the clinician must be taken to the pathological laboratory and worked out there, while the theories of the pathologist, so far as based upon the observations upon animals, could not be accepted as applying to man till they had been tested and checked in the wards. Medical science was not confined within the walls of the laboratory

To call treatment based on laboratory experiment rational and scientific, and that based on bedside experience empirical, implied a difference which did not exist, and would seem to suggest that clinical observation was neither rational nor scientific. Yet the same care and skill in observation were required in either case, and the difficulties to be surmounted were much greater in the wards than they were in the laboratory. The treatment of symptoms was often disparaged as essentially unscientific, yet surely if you could not cure the disease but could relieve its symptoms it would be irrational not to do so, though the reason of the relief given were not known. Symptoms were disorders of function produced by disease. The terms "rational" and "empirical" should be dropped as suggesting undue assumption and unworthy disparagement. Recently the bacteriologist had entered the domain of therapeutics with antitoxic serums and vaccines. Prepared, as those remedies must be, in special laboratories, it was only in the wards that their true value could be determined. The results were sometimes striking, but often the promises of the laboratory failed to be realized in the wards. He knew that it was stated that those remedies did no harm and might be used indefinitely with advantage. It would be strange if remedies so powerful for good were incapable of doing harm. It would be unwise to let the enthusiastic physiologist, bacteriologist, or pharmacologist run loose in the wards without the advice and controlling influence of the clinician, and it would, he thought, be risky both to science and to the patient. The proper position of each of the ancillary sciences was side by side with medicine. They must all work loyally together in a common search after truth. But if one must be pre-eminent it was surely medicine, which had the right to pre-eminence as the parent of them all.

The meeting concluded with the reading of a paper by Mr. Hugh Lett on two cases of perforation of the small intestine.

ROYAL SOCIETY OF MEDICINE.

Clinical Section.

Friday, October 8th, 1909.

A. Pearce Gould, F.R.C.S., in the Chair.

Radium Treatment.

Dr. N. S. Finzi and Dr. Ernest H. Shaw communicated a report on the case of *Carcinoma of the breast* shown to the society on May 14th, 1909. The patient was a woman, aged 78, who had her breast removed by operation in 1906. The disease recurred beneath the scar, and the axillary glands became enlarged. It was then treated with *x* rays with temporary improvement. On March 10th and March 12th, 1909, she was given two long exposures to the rays of 50 mg. of radium bromide filtered through a thin silver tube. This was followed by another exposure on April 29th, 1909, a screen of lead 1 mm. in thickness being used in addition to the silver. The first two exposures were excessive, and caused small but troublesome burns. The tumour and enlarged gland, however, disappeared, and at the time of her death were not palpable. She was admitted to the German Hospital with a strangulated umbilical hernia, and died on July 13th, 1909. At the *post-mortem* examination the whole of the mammary and axillary subcutaneous tissues was removed, together with the portion of skin affected by the burns. The sites of the breast tumour and axillary swellings were seen to be occupied by two thin irregular sheets of fibrous tissue; no definite nodule of growth could be distinguished in the fibrous masses, but at the edge of the larger mass two small ovoid bodies about 1 cm. in length were found, which felt like pieces of hardened fat. There was no sign of any growth in the mediastinum, but there were several nodules about 1.5 cm. diameter in the liver. There were two whitish raised patches, about 1 cm. diameter in the mucous membrane of the stomach. The kidneys, spleen, and other organs appeared to be normal. The authors of the report considered that the microscopical sections admitted of two interpretations—one that most of the cells of the growth had disappeared as a result of the radium treatment, but a few remained and afterwards began to multiply, some of them passing on to the lymphatic glands and liver; the other that the growth was still being absorbed locally at the time of the patient's death. In favour of the first suggestion were the facts that the carcinoma cells, thickly packed in the fibrous tissue, were well stained and were "creeping" along, as it were, the fibrous septa into the surrounding fat; here they were not surrounded by fibrous tissue. Also the growth in the lymphatic gland was apparently recent, and there was no thick fibrous tissue. The liver nodule also had very little fibrous tissue between the cells. The authors believed that if further treatment had been given it might have completed the process of absorption of the growth. The condition of the skin due to the burns, however, rendered further treatment inadvisable.

Pigmentation in Pernicious Anaemia.

Dr. H. D. Rolleston showed a case of pigmentation of the mouth in pernicious anaemia. The patient, a male aged 25, was admitted July 19th, 1909, for diarrhoea, anaemia, and enlargement of the liver and spleen. There was marked freckling of the lower half of the face, especially around the mouth. The lower lip presented inky pigmentation along the line of contact towards the angles of the mouth. On the oral surface of the right cheek there were one large and four small pigmented patches, and on the mucosa of the left cheek two similar pigmented patches. The patient had not taken arsenic. Sir Dyce Duckworth considered there might be some connexion between the freckling and the pigmentation in the mucous membrane. In reply to Dr. Parkes Weber, Dr. Rolleston admitted that it was impossible to deny that there was a resemblance between the freckling in the case exhibited and an incomplete form of xeroderma pigmentosum.

Removal of both Maxillae.

Mr. Albert Carless showed a man, aged 49, from whom he had removed both maxillae for so-called fibro-cystic disease. The patient had continued well after the operative treatment for twelve months, and was free from any signs of recurrence. He had been fitted with a plate carrying teeth, secured to the tissues in the roof of the nose by three rubber suckers. He could masticate soft food and smoked a pipe, and complained of but little inconvenience.

Calculi in Meckel's Diverticulum.

Mr. James Sherren described a case of Meckel's diverticulum containing calculi, and producing symptoms of abdominal colic. The patient, a man aged 38, was admitted to the London Hospital on May 10th, 1908, with the following history: In November, 1907, he had a severe attack of abdominal pain which his medical man considered to be due to gall stones. He was said to have passed gall stones in his motions a few days later. In March, 1908, there was history of a sudden onset of pain in the right iliac fossa described as "grinding" in character, and accompanied by vomiting. Pulse and temperature were normal on admission, and deep tenderness existed at McBurney's point. He was sent to a convalescent home and returned with another attack. On April 29th he had a sudden attack of pain which doubled him up. On May 16th the exhibitor opened the abdomen in the right iliac region, and at once felt a bladder full of stones. On bringing it outside the abdomen its nature was at once evident. It sprang from the antimesenteric border of the ileum, at its commencement being the same size as the ileum from which it sprang, dilating at its free extremity. The termination of the superior mesenteric artery ran in a fold of peritoneum along its anterior surface. It was quite free from adhesions. The specimen measured in the fresh state 4 in. in length, and was partially closed an inch from its attached end by a valvular fold of mucous membrane. Below this point it was filled with irregular brownish calculi, which were very brittle. Analysis showed them to be composed of cholesterin, bile pigments, and calcium oxalate. The patient made an uneventful recovery.

Rheumatoid Arthritis.

Dr. E. I. Spriggs showed a case of rheumatoid arthritis with enlargement of glands and spleen in a farm labourer aged 16. The trouble began at the age of 10. On admission to hospital four weeks previously the interphalangeal joints, both distal and proximal, of fingers and thumbs were red and enlarged, but the redness had since disappeared. The elbows, wrists, knees,

and ankles were uniformly enlarged. The lymphatic glands were enlarged. The spleen extended about 1 in. below the left costal margin. The urine contained a small quantity of albumen on admission. The author looked on the case as one of infective rheumatoid arthritis. Dr. A. E. Garrod observed that in regard to the cases described as examples of Still's disease he considered that similar cases do occur more rarely in adult life. The differences in the clinical picture exemplified the influence of age on a type of disease. Dr. Rolleston gave details of a case in an adult he had seen before Dr. Still brought forward his cases. Sir Dyce Duckworth thought the cases of Dr. Still were possibly a blend of struma with the so-called arthritic or rheumatic habit of body.

Papers.

Sir Dyce Duckworth read notes (1) of a case of gout with large tophaceous deposits, in a Mohammedan; (2) of a case of gout with uratic tophi, in a boy aged 14, for which he was indebted to Dr. Alder Smith, Medical Officer of Christ's Hospital. Dr. W. P. Herringham read a paper on two cases of pneumonia with considerable displacement of the heart simulating pleural effusion.

Reviews.

SEMMELWEIS'S PLACE IN THE HISTORY OF MEDICINE.[1]

The reduction of the female population of Vienna by means of puerperal fever was not one of the objects of the Congress of Vienna in 1815, and yet it was one of the things which it accomplished. Metternich, as is known, made it his business at that Congress, so far as he could, to re-establish in their old places all the petty courts, courtiers, princes, grand dukes, and aristocracies which had been toppled over by the mighty hand of Napoleon. The results of Metternich's policy may be judged by the famous speech of the late W. E. Gladstone, in which (not being then in office) he defied anyone to put his finger on a single spot in the map of Europe, and say, "There Austria did good." It may seem a far cry from the Congress of Vienna to puerperal fever, but there was a direct connexion. Metternich's policy delivered the Vienna hospitals over to the rule of obscurantist reactionaries; and the teaching appointments, instead of being filled by able men, were handed as gifts to the sycophants of courtiers and priests. In 1815 the Chair of Midwifery in Vienna was filled by Boer, one of the greatest obstetricians of his time. But, in 1822, court and clerical intrigues succeeded in ejecting him, and putting in his place Klein, a dull, stupid, and jealous man. This was why, although in 1848 Semmelweis discovered and demonstrated how puerperal fever could be prevented, yet his methods were not accepted, and the population continued to be thinned by puerperal fever, until the radiant splendour of Lord Lister's discoveries made it impossible for the authorities to shut their eyes and avoid the light any longer. In 1848 there were revolutionary outbreaks all over Europe. Semmelweis was associated with these attempts in Hungary. It is said that he entered the lying-in room to attend Frau Hebra in childbirth dressed in the uniform of the revolutionary legion. The result of the movement was to ruin the Semmelweis family and confirm the reactionary Klein in his position. Among the visitors to Vienna while Semmelweis was putting his principles into practice was the late Dr. C. H. F. Routh of London, who drew attention to Semmelweis's doctrine and its practical results in a paper published in vol. xxxii of the Royal Medical and Chirurgical Society's *Transactions*, 1849. Michaelis of Kiel followed out Semmelweis's instructions, with the result of almost annihilating puerperal morbidity. Among his own countrymen Semmelweis had the support of Hebra (who compared his discovery with that of Jenner), of Haller, and of Skoda. But Klein opposed him, procured his removal from his post as assistant in the clinic, and prevented him from being allowed to teach as a *Privat docent*. Stupidity slew free research.

Sir W. Sinclair's book, *Semmelweis, His Life and His Doctrine*, is a history of the tardy reception of the opinions of the reformer in the different regions of the civilized world. This slow adoption of his doctrines was due largely to Semmelweis himself. He could not be induced to attend a German medical society and expound his views. Sir W. Sinclair does not speculate as to why. We have no facts to go on; but we may be pardoned for a guess that Semmelweis, a Hungarian, who habitually wore the Hungarian dress, probably thought, and in his family circle spoke, in the Magyar tongue. His disinclination to address a German audience may have been due to want of fluency in the German language. Then his controversial method was not that of persuasion; on the contrary, he was given to violent abuse of those who differed from him. They may have deserved it; but it was not the way to alter their opinions. His great work on the etiology, the nature, and the prevention of puerperal fever, in the German language, was not published till 1860.

It is interesting to examine the causes why Semmelweis's discoveries were not accepted. First we may mention that Semmelweis only arrived gradually at his conclusion. His first discovery was that puerperal fever was caused by infection from a dead body. Afterwards he extended this conception and came to see that puerperal fever might be caused by any kind of decomposing organic matter. But his opponents, whether from ignorance or (as Semmelweis thought) from malice, persisted in representing that he taught that puerperal fever was due to cadaveric infection; and that his views were completely refuted if they could point to cases of puerperal fever arising where there was no possibility of infection from a dead body. Another cause was the loose way in which the word "erysipelas" was, and is, applied to two different conditions—erysipelas of the skin, often spoken of as erysipelas of the head and face, a comparatively trifling disease which usually ends in recovery, and erysipelas of the cellular tissue, which is often fatal. Bacteriologists, we believe, are not yet agreed whether the erysipelas coccus of Fehleisen, which produces erysipelas of the skin, is or is not the same organism as the streptococcus which produces erysipelas of the cellular tissue. Virchow saw the identity of some cases of puerperal fever with erysipelas of the cellular tissue, and therefore spoke of such cases as "*erysipelas malignum internum*." Many medical men were not aware that erysipelas of the skin was clinically different from erysipelas of the cellular tissue, and that it might affect lying-in women and newly-born children, and be in them the same slight illness that it is in other people, and end in perfect and complete recovery. The effect of this confusion was that if a case of erysipelas of the skin could be heard of as having occurred near a lying-in woman, that was taken to be sufficient explanation of puerperal fever. Another condition which made judgement difficult was the frequency of erythematous rashes and of emotional temperatures in lying-in women. This led some people, when they saw a lying-in woman with an emotional temperature and an erythematous rash, to think that they had to do with scarlet fever, modified in some mysterious way by the fact that the patient was a puerpera. If the next woman that the doctor saw died of puerperal fever, that also was scarlet fever, made malignant by the puerperium. This fog has been for ever we hope blown away by the accurate observations of Boxall, who has shown that the symptoms and course of scarlet fever are exactly the same in a lying-in woman as in any one else. Another cause which retarded the general acceptance of Semmelweis's views was the progress of sanitation and the importance attached to proper drainage. When a doctor neglected or was ignorant of antiseptics, and so let his patient be infected, it was a great comfort to call in an expert who would assure the friends that neither the doctor nor the nurse was in the least to be blamed; it was the drains. The late Dr. Cullingworth, in the opinion of Sir W. Sinclair, overrated the work of Oliver Wendell Holmes. Had Semmelweis possessed the literary genius of Holmes, his discovery, Sir William thinks, would have been universally accepted within twelve months. Space forbids us to comment further. The book is a great chapter of history graphically told. We thank Sir William Sinclair for it.

[1] *Semmelweis, His Life and His Doctrine: a Chapter in the History of Medicine.* By Sir William J. Sinclair, M.A., M.D., Professor of Obstetrics and Gynaecology in the University of Manchester. Manchester: At the University Press. 1909. (Roy. 8vo, pp. 379. 7s. 6d.)

INTERPRETATION OF SYMPTOMS.

The tendency of modern clinical medicine to look to the laboratory for diagnostic aid, has to some extent diverted attention from the lessons to be learnt from the close examination of the patient. Dr. James Mackenzie in his recent work on *Symptoms and their Interpretation*,[2] has put forward a record of careful observation and thought, which deserves the attention of practitioners of medicine of every degree.

The working of the living body is, and must always remain, to some extent a mystery, and absolute proof of all its mechanism is unattainable. A working hypothesis is needed, and, as the author himself points out, such a hypothesis may be faulty in itself and yet prove of value as a stepping stone to further discovery and knowledge.

The thesis which occupies the work before us deals with the process by which the recognized symptoms of certain forms of visceral disease may be produced. The nomenclature inherited from teachers of a bygone period still permits of such clinical description as a "tender liver" or a "painful gastric ulcer," in spite of the abundant evidence afforded by modern surgery that these organs are insensitive. That the hepatic region may be tender on deep pressure and that superficial hyperalgesia may be found in association with gastric ulcer is obvious to all, but the exact means by which these symptoms are brought about is not quite so easily determined.

Dr. Mackenzie devotes the earlier chapters of his book to a close examination of the evidence upon which he rests his view that impulses may be conveyed from disordered viscera by way of the afferent visceral (sympathetic) nerve fibres to centres in the cord. The centres thus excited send corresponding motor and sensory impulses to the muscles and to the skin in relation with the diseased organ, and these he terms viscero-motor and viscero-sensory reflexes. Thus there may be produced contraction, and even painful contraction, of muscle associated with hypersensitiveness of the skin. He also suggests that the excitation of one centre in the cord may be communicated to other centres adjacent to it, and that muscular contractions and tenderness may be set up in regions supplied by efferent nerves emanating from such irritated centres.

While giving due weight to the writings and observations of other workers in the same field of study, the author relies mainly upon his own clinical experience to supply the illustrations of his theory. In many respects his results are in accord with those of Dr. Head, but, like many other clinical observers, he has not been able to define the areas of superficial tenderness described by Dr. Head with any approach to the certainty originally claimed for them.

In successive chapters Dr. Mackenzie examines the symptoms produced in various disorders of the abdominal and thoracic viscera, and points out the way by which his theory of viscero-motor and viscero-sensory reflexes may be utilized in the diagnosis of obscure cases. Without making undue claims for his theory, and fully recognizing the limitations of its application, he presents a case which compels attention. In dealing with the pains of pleurisy, he admits the difficulty of determining the nerve supply of the membrane, and can only draw an inference from the analogy of the peritoneum, but he attributes much of the deep thoracic pain, such, for instance, as that associated with angina pectoris, to the viscero-motor reflex giving rise to painful spasm of intercostal muscles.

Dr. James Mackenzie writes with a long experience behind him, and his work bears the stamp of the bedside as well us that of the study. Its teaching is in full accord with that of some of the French schools, where a reaction in favour of accurate clinical observation has succeeded to the wave of chemical and microscopic methods which has of late years somewhat overwhelmed the older system of diagnosis. We can cordially commend the book to the notice of the younger physicians and teachers of to-day, in respect not only of the thesis which it endeavours to prove, but also of the close and careful study of the actual phenomena of disease which have been made to yield information too often missed by the over-confident observer.

[2] *Symptoms and their Interpretation.* By James Mackenzie, M.D., M.R.C.P., Physician to the West-End Hospital for Nervous Diseases, London. London: Shaw and Sons. 1909. (Demy 8vo, pp. 317.)

COMPENSATION FOR INJURY.

The work by Mr. E. T. H. Lawes on the *Law of Compensation for Industrial Diseases*[3] is one of a type which is likely to appear with increasing frequency. There can be no doubt of the utility of such a book, particularly to lawyers. Many of the problems evolved under the Workmen's Compensation Act which have called for solution are dealt with in a clear and lucid style. While the work will appeal mostly to members of the legal profession, there is in it matter of great importance to the medical profession, especially those who may be called upon to deal with industrial diseases. The certifying surgeon who, after reading the documents sent him by the Factory Department, turns to this book will find assistance in some of the difficulties which may perplex him, and he will probably feel that if he can surmount these he will have earned his fee. The medical referee under the Act will also find information of value to him on the occasions in which he is called upon to exercise his function. The second part of the book contains descriptions of the scheduled diseases; these appear, on the whole, to be drawn up with care, but we would doubt if "chronic puckering of the skin" is a sufficient description of the condition known as Dupuytren's contraction. This part of the work will no doubt be appreciated by lawyers, while medical men will seek for such information elsewhere. The special rules and regulations of the Factory Department with regard to certain industries are explicitly set out, and form a useful addition to the more purely legal matter. The volume is a handy one, excellently printed on good paper.

Dr. R. Dahmer has done a useful piece of work in bringing together a series of 168 medical reports, selected from those he has had to prepare for the use of various judges and magistrates in reference to such matters as public life insurance, workmen's insurance, trades unions, and accidents.[4] They illustrate very strikingly the class of circumstances in which the specialist in diseases of the throat, nose and ear, may be called upon to give opinions of the utmost importance, and a perusal of the cases which the author here narrates cannot fail to be both interesting and instructive to his colleagues. Among them we naturally find cases in which the patient professes to have lost his hearing as the result of some slight injury. It need hardly be said that the methods of circumventing simulation and exaggeration and of detecting genuine injury take a very prominent place in this branch of the author's work. We trust that this is a local peculiarity, but we can scarcely hope to be free from these evidences of degeneracy in this country also, and the practitioner who has studied the cases here described will be all the more able to meet the difficulties when they arise. This work is an interesting companion to that of Barnett on "Accidental Injuries to Workmen," reviewed in our issue of October 9th.

The Workmen's Compensation Act of 1907 has greatly enlarged the field of the malingerer in England, and in no sphere of medicine does he find greater scope for the exercise of his cunning than in the domain of ophthalmology. Any method which will make detection more rapid and certain will be welcomed by all ophthalmic surgeons. The methods in vogue, the spectroscope, the diploscope, various coloured letters viewed through tinted glasses are all open to objection. Either they entail apparatus not possessed by the ophthalmic surgeon, still less by the general practitioner, or the method is one easily evaded by the clever malingerer. Again, it may be almost impossible to explain the principles of the apparatus used to the county court judge who is trying the case. In Germany malingering is as rife as it is elsewhere where Compensation Acts are in force, and in addition it is resorted to to evade conscription, though in rare instances only, because the penalties are very severe and detection almost certain. Snellen in his vision types has a red A and a green V printed on a black background which are to be viewed through

[3] *The Law of Compensation for Industrial Diseases: Being an Annotation of Section 8 of the Workmen's Compensation Act, 1906, etc.* By Edward Thornton Hill Lawes, M.A., B.C.L. London: Stevens and Sons. 1909. (Medium 8vo, pp. 320. 7s. 6d.)

[4] *Aerztliche Obergutachten aus der Praxis eines Ohren-, Nasen- und Halsarztes.* By Dr. R. Dahmer, Posen. Berlin: S. Karger. 1908. (Sup. roy. 8vo, pp. 52. M. 1.60.)

a red and green glass. Dr. HASELBERG of Hamburg, a staff-surgeon in the German army, has elaborated this idea, and in his plates[5] gives a method of exposing the malingerer which is apparently ready and practical. The principle depends upon the fact that red when seen upon a white background through a suitable green glass appears black, and when viewed through the right shade of green disappears entirely. The letters on his plates are printed partly in vermilion, partly in black upon a white card. The colour is so arranged that if the red part disappears another letter is seen; for example, N becomes I, E becomes L, P becomes B. The Gothic alphabet is used as well as the Latin, and is especially suitable for the method. The supposed malingerer is furnished with a green glass before his supposed defective eye, a red before the better eye. In a moderate light the plate of letters is rapidly placed before him, and he is asked to read. If he can really use both eyes he is at once unmasked, for he sees the whole of the letter black. If the eye really is blind or very defective, he only sees the black part of the letters. It must be at once said that the green glass supplied with the ordinary test card is not dark enough; the red is too dark. The correct glasses can be obtained from the publishers at a very reasonable price. The test is cheap, and is perfectly simple and yet effective. The plates fold up, and are kept clean in a neat case, 6 in. by 8½ in. We can confidently recommend the method to any medical man who may have to deal with malingerers. The examination can easily be demonstrated to the judge in court, and the most expert simulator will find it impossible to remain masked.

PUBLIC HEALTH.

ALTHOUGH primarily written for the use of army medical medical officers, the *Handbook of Practical Hygiene*, by Majors WANHILL and BEVERIDGE,[6] will be of undoubted assistance to all medical men who are engaged in the public health service. Without in any way sacrificing detail to brevity, the authors have succeeded in condensing within the space of 150 pages a very clear and concise account of the best methods of examination of water, sewage, air, and of the principal foods and beverages. A chapter is devoted to the consideration of food values, and the method of constructing a diet upon scientific lines is admirably stated. Included in this chapter is an example of a mess-sheet for one day for ninety-eight men, together with Atwater and Bryant's table of the composition of the food materials likely to be used in a soldier's diet. In the chapter dealing with the chemical examination of water the authors very properly point out that the amount of chlorine present must be taken in conjunction with the known chlorine figure of the district. In actual practice it is not at all easy to ascertain what is the "chlorine standard" of a particular locality, and, failing the ability to do so, it is often of advantage to take two or three samples of a suspected water at intervals of one or two weeks, and if the amount of chlorine in each is the same or varies only slightly it may be assumed that that amount is the standard. For the examination of air and the estimation of CO_2, Pettenkofer's method is described very fully, and Dr. J. S. Haldane's apparatus is recommended to be employed when it is required to keep the air of occupied buildings under constant supervision. It seems an omission not to have referred also to the simple methods designed by Dr. Harold Scurfield and Dr. W. Robertson. The chapter on bacteriology is admirably written, and the short account in the appendix of the method of performing Widal's reaction macroscopically should prove of assistance to those who are only called upon to carry out the process at infrequent intervals. For the general arrangement of the handbook and its readiness of reference we have nothing but words of commendation, and the interleaving of blank pages for notes or references adds very materially to the utility of the volume.

[5] *Tafeln zur Entlarvung der Simulation Einseitiger Blindheit und Schwachsichtigeit. Nach Snellen entworfen.* Von Stabsarzt Dr. von Haselberg in Hamburg. Wiesbaden: J. F. Bergmann; and Glasgow: F. Bauermeister. 1908. (Med. 8vo, pp. 22, and tafeln. 2s.)

[6] *The Sanitary Officer's Handbook of Practical Hygiene.* By C. F. Wanhill, Major, R.A.M.C., and W. W. O. Beveridge, D.S.O., Major, R.A.M.C. London: Edward Arnold. 1909. (Crown 8vo, pp. 160, interleaved with blank pages for notes. 5s.)

Members of sanitary authorities who may be called upon to consider schemes of sewage disposal will find a great deal of useful information in the little handbook of Messrs. W. H. TRENTHAM and JAMES SAUNDERS.[7] One chapter is devoted to sewerage systems and the laying of sewers, and the opinions expressed are quite in accordance with recognized views on the subject, although on the vexed question of the disconnecting trap the authors are suspiciously, or possibly discreetly, silent. After discussing several other methods the authors state very definitely that as a preliminary form of treatment no method of disposal can compare with the Dibdin slate bed, in which the sewage is treated in the beds aërobically, a layer of air being retained on the under-surface of the slates each time the bed is filled, thus supplying sufficient oxygen to foster the aërobic bacteria necessary to dealing with organic matters deposited on the surface of the slates. The volume is well illustrated with photographic reproductions of sewage disposal works either while in course of construction or completed, and there is a fairly exhaustive chapter upon the powers and duties imposed by Parliament on local authorities with respect to the sewerage of towns and villages.

There is great need for a reliable manual for the use of managers of sewage works, and Mr. EASDALE'S handbook[8] is an attempt to supply this need. It will be found, however, rather disappointing. The complexity of the processes adopted for sewage treatment, and the diversity of the difficulties arising from them are so great that it is impossible within the limits of a modest volume like this to give much information. The book contains, however, many useful hints. The various processes are dealt with in turn, and quite properly the motto of "little and often" is advocated in regard to cleansing screens, detritus pits, tanks, and filters. In discussing the management of tanks, no sufficient distinction is made between those used as septic tanks and those for sedimentation. Nothing is said about pressing sludge, and the whole subject of land irrigation is discussed in a couple of dozen lines. The chief fault of the pamphlet—for it is hardly more—is that it deals with the various processes in far too general terms to be of much use to a manager who finds himself confronted with any difficulty.

The medical officer of health of to-day requires to possess a thorough knowledge of the details of food inspection. Evidence of the increasing importance of this part of his duties is to be found in the fact that the fifth edition of Dr. FRANCIS VACHER'S well-known *Food Inspector's Handbook* is larger by more than 100 pages than the first edition, which was published in 1892, while the number of illustrations has been increased from 20 to 74.[9] In the earliest edition most of the drawings were, we believe, from the pencil of the author, but in the present volume he has entrusted them to Mr. R. E. Holding, who has succeeded in depicting pathological and other conditions in a manner which cannot fail to prove helpful not only to the student but also to health officers in actual practice.

The atlas and textbook of hygiene which has been added to Lehmann's series is edited by Dr. PRAUSNITZ,[10] and aims at bringing together the technical details and the hygienic considerations connected with housing and town-planning. In addition to its value for public health authorities, the book is intended to be helpful to the architect and builder, who sometimes complain that they could better meet the interests of hygiene if the requisite details of construction were explained to them more fully from their own point of

[7] *Modern Methods of Sewage Disposal, a Practical Handbook for the Use of Members of Local Authorities and their Officials.* By W. H. Trentham and James Saunders. London: The Sanitary Publishing Co., Limited. 1909. (Post 8vo, pp. 66; 14 illustrations. 2s. 6d.)

[8] *The Practical Management of Sewage Disposal Works.* By W. C. Easdale. London: The Sanitary Publishing Co., Limited. 1909. (Fcap. 8vo, pp. 56. 2s.)

[9] *The Food Inspector's Handbook; a Practical Guide for Medical Officers of Health, Meat Inspectors, Army Officers, Students, and Others.* By F. Vacher. Fifth edition. London: The Sanitary Publishing Company, Limited. 1909. (Post 8vo, pp. 268, 74 illustrations. 7s. 6d.)

[10] Lehmann's Medizinische Atlanten. Bd. viii. *Atlas und Lehrbuch de Hygiene, mit besonderer Berücksichtigung der Städte-Hygiene.* Herausgegeben von Professor Dr. W. Prausnitz. München: J. F. Lehmann. 1909. (Post 4to, pp. 700, 818 illustrations, including 4 coloured plates. M. 28.)

view. The editor has therefore enlisted the services of architects and engineers, as well as various authorities on sanitary and medical matters, in furnishing the contents of the present volume. The book, which is copiously illustrated, commences with the construction of streets and other public places, the planning and building of various types of houses suitable to the conditions of the locality and the needs of the occupants, the water supply, and the disposal of refuse. Special chapters are then devoted to schools, hospitals, barracks, slaughter-houses, and other public buildings. The book is well planned, and although medical officers in this country will find in it a profusion of elementary detail about which they do not require instruction, they will probably pick up useful hints here and there from a perusal of its pages and a study of the drawings.

Under the title *La Medicina Sociale*,[11] Dr. ALLEVI discusses such subjects as tuberculosis, malaria, typhoid, small-pox, syphilis and prostitution, ankylostomiasis, pellagra, and alcoholism—diseases which certainly play a large part in the problems of social medicine. One would imagine that most of these conditions get more or less adequate treatment in the various treatises on hygiene, yet there are some advantages in treating these purely medical aspects of public health work, and omitting all that part which is concerned with sanitation and physics. Such a book appeals more to the clinical side of a medical man's work, and, although in the limits at his disposal it is impossible for the author to deal very fully with the subjects he has selected, there is little that is essential left out. Over and over again he laments the backwardness of public opinion on all these questions in Italy, and as an earnest and reasoned plea for a better state of things such a book as this may be of use even to the non-medical public. Whilst recognizing the ideal, he is sufficiently practical not to recommend measures which at present are too far ahead of public opinion to be accepted, and is therefore content with something less for the time being. One would have thought whisky was sufficiently well known to be credited with the aspirate and not spelled "wisky." The author is a little apt to wander off into digressions—for example, on protection—but throughout the book his moral earnestness as a doughty fighter in the battle against disease and ignorance in society is most marked.

Household Pests and Household Remedies[12] is a small book evidently intended to instruct the laity. Its author, Mr. W. R. BOELTER, has already written similar works on rats. It is, perhaps, too much to expect scientific accuracy in such compilations, but at least common facts should be correctly interpreted. Yet in Chapter XI, on the mosquito, we read the astounding statement: "Though we read now and then in the newspapers, especially during hot summers, that the mosquito has appeared in Great Britain, there is no proof of any kind yet that this terrible pest has invaded this country. Our common gnat is easily mistaken by inaccurate observers for the mosquito," etc. Such ignorance is hardly excusable in the newspaper reporter now, and anyone who presumes to write as an authority on the subject ought to know that there are indigenous English mosquitos. Still the book, if only it makes the laity think a little about these subjects, will do good; and certainly the problem of rat destruction is one that will have to be faced in the future.

NOTES ON BOOKS.

DRS. HERMANN SCHALL and AUGUST HEISLER[13] have prepared some very convenient tables for use in the medical wards at Marburg, giving the percentage of albumen, fat, carbohydrates, common salt, purin bodies, and water, and the caloric value, of the ordinary articles of diet, including the various kinds of butcher's meat, poultry, game, and fish, sausages, smoked and salted meats and fish, eggs, milk preparations, butter, fats and cheese, flours, infants' food, bread, biscuits, various vegetables and fruit, meat extracts, confectionery, and the alcohol and sugar percentage of beers, wines, and spirits. The principal mineral waters are tabulated so as to show their chief components—common salt, sodium, calcium, and magnesium bicarbonate, sodium and magnesium sulphates, iron carbonate, and carbonic acid gas, in parts per litre, and their temperature is given in another column. Another table gives the percentage of cellulose and mineral salts in the ordinary vegetables and fruits. There are also tables of digestibility, of the body-weight of a nursing child at various ages, and tables of the caloric requirements of children and adults, allowing for age and occupation. The authors formulate the following law for the normal weight of adults: An adult normally weighs as many kilograms as his height in centimetres exceeds a meter. For example, if his height is 172 cm., his naked normal weight should be 72 kilog.

The appearance of a fourth edition of LYON'S *Medical Jurisprudence for India*,[14] originally published in 1888, attests the popularity and usefulness of the work. This, like the third edition, is edited by Lieutenant-Colonel L. A. Waddell, C.B., C.I.E., I.M.S. (ret.), who has carefully revised the book, recast many parts of it, and made many additions which contribute materially to its value. Among these we note a series of questions such as would probably be asked of a medical witness under various circumstances; a considerable expansion of the section on insanity in which the editor was aided by Major C. R. Milne, I.M.S., of the New Imperial Asylum Department; detailed information regarding the laws relating to lunacy in India and the steps necessary to obtain admission into Indian lunatic asylums; the duties which a medical man may be required to perform with reference to life insurance and compensation claims for accidental injuries; and a chapter on medical obligations, including medical responsibility, patients' secrets, and malpraxis. These are the most conspicuous additions, but throughout the book evidences exist of thorough and conscientious overhauling and of a desire to bring it up to date—an object which has been very successfully accomplished. Medical jurisprudence being an exposition more or less systematized of the relation of the science of life in all its aspects and branches to the administration of law, it is necessary, in a work dealing with the subject, to give clear and detailed information regarding the laws which have been enacted and the arrangements and procedure which have been established for the effective administration of these, especially as they concern vital conditions and rights. This constituted a conspicuous feature of Lyon's book as originally issued, and has been held prominently in view in the preparation of the present edition. The legal matter has undergone revision by Mr. H. M. Morrison, barrister and advocate of the High Court of Calcutta. Several good illustrations has been added, including prints of finger marks, various forms of unruptured hymen, and many poisonous plants. Altogether this edition is well fitted to enhance the reputation and utility of Brigade Surgeon Lyon's manual.

[11] *La Medicina Sociale*. By Dott. G. Allevi. Manueli Hoepli. Milan: U. Hoepli. 1909. (Pott 8vo, pp. 303. L. 3.50.)

[12] *Household Pests and Household Remedies*. By W. R. Boelter. London: John Bale, Sons, and Danielsson, Limited. (Foolscap 4to, pp. 179; 86 illustrations. 2s. 6d.)

[13] *Nahrungsmittel-Tabelle*. Von Dr. Hermann Schall and Dr. August Heisler. Würzburg: Curt Kabitzsch. 1909. (Sup. roy. 8vo, pp. 42. M. 1.90.)

[14] *Medical Jurisprudence for India, with Illustrative Cases*. By J. B. Lyon, C.I.E., F.C.S., F.I.C., and L. A. Waddell, C.B., C.I.E. LL.D., M.B., F.L.S. Calcutta: Thacker, Spink and Company. 1909. (Demy 8vo, pp. 702, with 6 plates and 61 engravings. Rs. 18.)

MEDICINAL AND DIETETIC ARTICLES.

Diamalt with Cod-liver Oil.

WE have received from the British Diamalt Co. (11 and 13, Southwark Street, London, S.E.) samples of two combinations of malt extract with cod-liver oil which they have recently put upon the market. These are stated to consist of cod-liver oil and malt extract only, with neither flavouring ingredients nor preservatives, and to contain respectively 15 and 33⅓ per cent. by weight of the oil, or, approximately, 20 and 42 per cent. by measure. Our analyses of the two samples gave the following results:

	No. 1.	No. 2.
Cod-liver oil	15.3 ...	33.6 per cent.
Maltose	59.6 ...	57.9 ,,
Diastatic power of the extract, in terms of the B.P.C. test ...	671 ...	455

Notwithstanding the large proportion of oil present, its taste was most effectually disguised by the malt extract, and both preparations were very palatable; the absence of aromatic essential oils, such as are sometimes used to mask the flavour of the oil, must also be regarded as an advantage. Both samples were of quite thin consistence, and should be acceptable even to those who find viscosity and stickiness as repellent as the undisguised taste of cod-liver oil. Either of them readily forms a milky emulsion when shaken up with water.

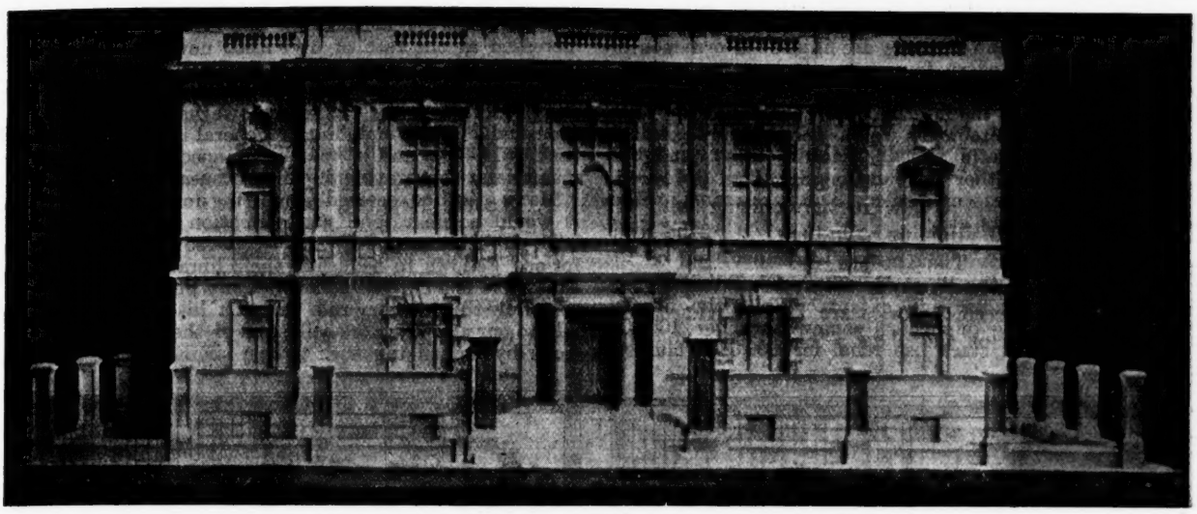


Fig. 1.—Elevation. (From the *American Architect and Building News.*)

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA:

ITS LIBRARY AND ITS NEW BUILDING.

By W. W. Keen, M.D., Hon. F.R.C.S Eng. and Edin.,

Emeritus Professor of Surgery, Jefferson Medical College, Philadelphia.

The oldest medical organization (not a State society) in the United States is the College of Physicians of Philadelphia, which was founded in 1787 by that valiant fighter, Benjamin Rush, and twenty-three others of the half a hundred practitioners then resident in the city. It was and is a "Collegium" similar to the British "Royal Colleges"—a scientific and not a teaching body. Its charter states that its objects are "to advance the Science of Medicine and thereby lessen human misery." Its Fellows include those practising any department of medicine. For fifty-three years (1791–1845) it met in the Hall of the American Philosophical Society, which had been founded by Franklin in 1743, the oldest and the most distinguished scientific society in the United States. In 1863 it moved into its own building at Thirteenth and Locust Streets. This has long been insufficient, especially for the rapidly growing library, and on November 10th, 1909, the college will open its new building on Twenty-second Street above Chestnut. It will then occupy what, I think, is the finest building owned by any medical society in Europe or America. Including the ground, the building and its furniture and fixtures, the cost will be about four hundred thousand dollars ($400,000), or eighty thousand pounds (£80,000).

The early Fellows were largely Edinburgh men, though not a few had been educated at Leyden, London, and elsewhere. They were friends or pupils of Cullen, the Hunters, Hewson, Pott, Fothergill, Albinus, Morgagni, and others. Of the more recent Fellows, there are few who have not availed themselves of the splendid opportunities which London, Edinburgh, and the chief Continental medical centres afford.

So, too, as a large proportion of the Founders had been associated with Washington in the Revolutionary War, their successors were most active during the Civil War and in time of pestilence (yellow fever, typhus, and cholera), and a memorial tablet records the names of nine Fellows who thus lost their lives.

Until very recently the number of Fellows has been very small. It has never aimed to include the rank and file of the profession, but has had a selected Fellowship which even now numbers but 439 Fellows, 40 Associate Fellows, of whom 11 are from Great Britain, and 4 Corresponding Members. It is a striking testimony to the energy and literary activity of the local Fellowship that for many years past 10 per cent. annually have published new books or new editions of former books.

The New Building.

We owe the new building chiefly to our most active and most distinguished Fellow, Dr. S. Weir Mitchell. At his instance (he is one of Mr. Carnegie's personally selected original trustees of the Carnegie Institution) Mr. Carnegie led the list of our contributions with one hundred thousand dollars ($100,000), and Dr. Mitchell has given and obtained from friends and patients more than an equal amount. The rest of us have done what we could, but none have approached him.

The lot is 130 ft. by 184 ft., and is surrounded by streets on three sides. The building is 108 ft. by 150 ft. Thus we have light as well as protection from fire on all four sides.

Besides the large reading room accommodating 50 readers, there is the journal room opposite with space for 50 more readers. For the 850 medical journals which are on file, the shelving in this room—devised by the librarian, Mr. Fisher—is novel and most useful. Six shelves without partitions run around the entire room. Three of them are horizontal. Above each horizontal shelf there is another inclined at about 45 degrees. On the inclined shelf the latest number of each journal is placed, while immediately below it, on the horizontal shelf, are all the loose preceding numbers of the same journal awaiting binding as soon as the volume is completed.

The largest room for the meetings of the College, seating over 500, will be adorned with the portraits of former presidents, and of Rush, Shippen, Physick, and other distinguished Fellows. The walls of this and other rooms and the halls will be hung with copies of Rembrandt's Lessons in Anatomy, oil portraits of Hippocrates, John Hunter, Harvey, Sydenham, Cuvier, and Gay-Lussac, and a dozen busts. Besides these and other oil paintings, we have 3,082 photographs and engraved portraits, already card-catalogued, and many more are not yet entered. We would esteem it a great favour if our European and American friends would enrich this very large collection by sending their own signed photographs. We have also a replica of the celebrated tablet of Mundinius (A.D. 1315), on the façade of the Church of San Vitale in Bologna.

There are also three smaller meeting rooms. All these rooms except one are named after deceased Fellows, Samuel D. Gross and others, and have been furnished by their descendants and friends as memorial rooms. The one exception is the large meeting room, which is appropriately named after Dr. Mitchell, and has been furnished by his many friends as a testimony to his services to the college, and in admiration of his undiminished mental vigour and alertness at fourscore.

An office is provided for the Directory for Nurses and the living apartment of its secretary. Through the Directory nurses for all sorts of cases can be secured by telephone at any hour of the day or night. Its profits all go to the library, to which it has been an important adjunct.

Externally the building is of brick, trimmed with limestone. It is of steel construction and absolutely fireproof. The entrance hall and stairway are finished in ornamental marble. All the modern improvements have been introduced in the arrangements for heating, lighting (electrical), and ventilation; in the internal intercommunicating telephone from room to room, as well as the ordinary external telephone; pneumatic tubes; electric lifts; and for vacuum cleaning, either by blowing or suction, as desired. There are, of course, ample offices and work rooms for the librarian, cataloguers, etc.

The Library.

The housing of the library in the new building is very complete in character and extent. While the library numbers (excluding duplicates) somewhat under 100,000 volumes, the book stack has room for 300,000 volumes, with ample provision for large future extension whenever necessary. Its windows are provided with wire glass in metal frames, and there is further protection from fire by rolling steel fire shutters, which drop automatically at a certain temperature. It is also cut off from the remainder of the building by fire doors.

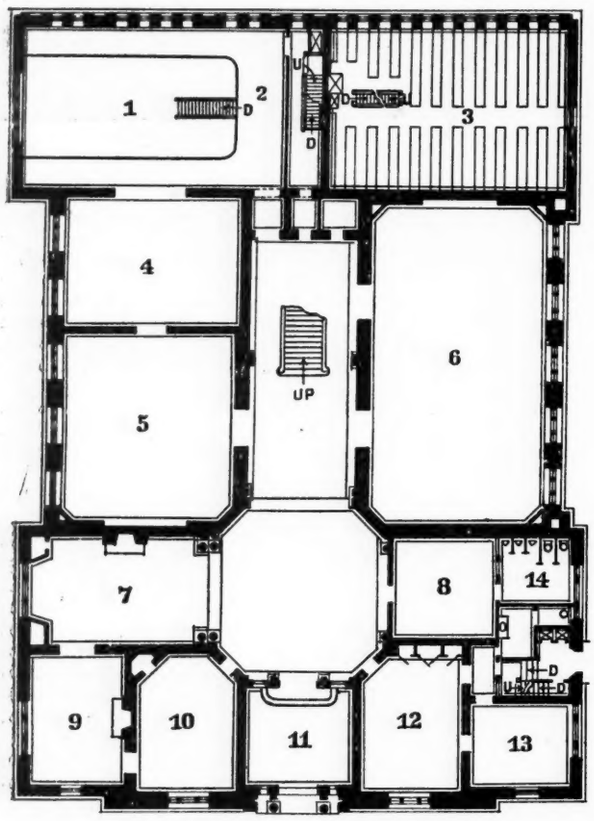


Fig. 2.—Plan of First (Ground) Floor.

1, Museum. 2, Gallery. 3, Stack Room. 4, Museum. 5, 6, Lecture Rooms. 7, Reception Hall. 8, Coat Room. 9, The Gross Library. 10, Secretary. 11, Vestibule. 12, Office. 13, Office. 14, Lavatory. 15, Cataloguers.

Special provision is made for the readers who are engaged in prolonged serious research by a dozen small private rooms, in which the Fellows can study and dictate to their stenographers, and on leaving the room simply turn the key. This is both a saving of time and trouble to the student and the library officials, and also saves much wear and tear on the books, which otherwise would have to be replaced and taken down again each time the reader returned. The advantage of freedom from all interruption is self-evident. All such facilities promote and encourage literary research. The new card catalogue is all typewritten, and is nearly complete for the books, after which the theses and pamphlets will be catalogued.

But while the housing and the conveniences of the library are of importance, its contents are its glory. It is significant that in 1788, when the college was only a year old, the foundation of the library was laid. Though it grew very slowly at first, for the last few years it has increased at the rate of over 2,000 new volumes a year, besides nearly as many more in duplicates.

For new books, journals and binding (the college pays all the administrative expenses) we have about seventy thousand dollars, including a general library endowment fund ($14,400), and a number of special funds (largely memorials) aggregating fifty-five thousand dollars.

Many gifts are received from living donors (among whom it would be ungrateful not to mention our generous local book publishers), and it has become so common a custom for our Fellows to bequeath their libraries to the college that there is a current belief that any Fellow who neglects to follow this salutary rule imperils his future. We also add to our already large collection of theses and dissertations by exchanging with twenty-six European universities. Among these theses we are so fortunate as to have a complete file of the *Thèses de Paris* from 1882, and a partially complete file from 1798, when the series began, down to 1882. There are usually forty to fifty volumes of these theses issued annually.

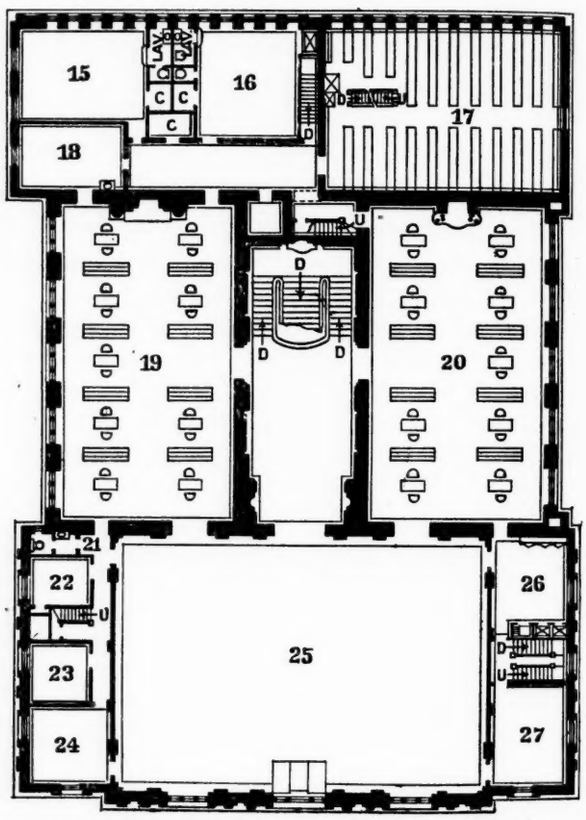


Fig. 3.—Plan of Second Floor (that is, according to English Terminology, First Floor).

16, Work Room. 17, Stack Room. 18, Librarian. 19, Reading Room. 20, Periodical Room. 21, Lavatory. 22, 23, 24, Private Study Rooms. 25, S. Weir Mitchel Hall. 26, 27, Serving Rooms.

Besides all the ordinary books in most modern languages, the library is rich in the older classics of medicine, and especially in incunabula. Of these, printed between 1470 and 1500, we have nearly 150, many of them among the rarer of incunabula, and some probably unique or almost unique. Our collection of incunabula, I believe, is one of the largest and most important in existence.

We are so fortunate, also, as to possess one of the six copies of the first edition of Harvey's *De Motu Cordis et Sanguinis* to be found in the United States; it has also the still rarer final leaf containing the Errata. We have also the splendid photographic facsimile of the Vienna Dioscorides Codex, in two large folios, published at Leyden. Among the many curios I may mention a lock of Jenner's hair, Laënnec's stethoscope, a set of Perkins's "tractors," and the knocker from the door of Ephraim McDowell.

The Mütter Museum.

In 1856 the late Thomas D. Mütter, Professor of Surgery in the Jefferson Medical College, presented to us his Museum together with an endowment of thirty thousand dollars to provide for its care and increase, and for the annual "Mütter Lecture." The college has provided four rooms covering about 3,500 sq. ft. of floor space with ample galleries for the Museum. Among its valuable collections are the unique Hyrtl cases showing the comparative anatomy of the internal ear, his placental injections, corrosion preparations, and his collection of typical skulls, the Politzer ear collection, etc.

Nowhere can the medical visitor to Philadelphia spend a more peaceable or more instructive hour than in our new building amidst its books and specimens. The library is open to all the non-medical public who may wish to investigate any subject in which they may have some special interest, as well as to the entire medical public of whatever school, and even to the medical guerillas of modern growth.

The working rooms of the library staff and most of the private study rooms are on the mezzanine floor not shown in the plan.

THE INTERNATIONAL CONGRESS ON LEPROSY.

Resolutions.

At the Second International Congress on Leprosy, held at Bergen from August 16th to 19th, the following resolutions were adopted:

A.—1. The Second International Scientific Conference on Leprosy confirms in every respect the resolutions adopted by the First International Conference of Berlin, 1897. Leprosy is a disease which is contagious from person to person, whatever may be the method by which this contagion is effected. Every country, in whatever latitude it is situated, is within the range of possible infection by leprosy, and may, therefore, usefully undertake measures to protect itself. 2. In view of the success obtained in Germany, Iceland, Norway and Sweden, it is desirable that other countries should isolate lepers. 3. It is desirable that the children of lepers should be separated from their parents as soon as possible, and that they should remain under observation. 4. An examination should be made from time to time of those having lived with lepers by a doctor having special knowledge. It is desirable that lepers should not engage in certain trades or occupations. All leper vagabonds and beggars should be strictly isolated.

B.—5. All theories on etiology and the mode of propagation of leprosy should be carefully examined to ascertain if they accord with our knowledge of the nature and biology of the bacillus of leprosy. 6. The clinical study of leprosy induces the belief that it is not incurable. We do not at present possess a certain cure. It is desirable, therefore, to continue the search for a specific remedy with the greatest zeal.

Resolutions of the Berlin Conference.

It may be recalled that the First International Leprosy Conference, held in Berlin in 1897, arrived at the following conclusions: Every leper is a danger to those around him, the danger varying according to the nature and extent of his relations to others, and also to the sanitary conditions under which he lives. Among those living in an insanitary manner, every leper is especially dangerous to his family and fellow-workers. The theory of the heredity of leprosy is becoming less probable, and the contagiousness of the disease is generally accepted. The following resolutions were formally adopted:

1. In countries in which leprosy forms foci or has a great extension, isolation is the best means of preventing the spread of the disease. 2. The system of obligatory notification and of observation and isolation, as carried out in Norway, is recommended to all nations with local self-government and a sufficient number of physicians. 3. It should be left to the legal authorities, after consultation with the medical authorities, to take such measures as are applicable to the special social conditions of the districts.

Distribution of the Disease.

From the reports of the official delegates and from data furnished by the Norwegian Government, the following figures show approximately the present distribution of cases of leprosy throughout the world; France, 246; Iceland, 200; Germany, 28; Roumania, 208; Servia, 3; Bulgaria, 9; European Turkey, 550; Greece, 9; Crete, 600; Russia, 1,372; Italy, 123; Spain, 240; Palestine, 800; India, 97,340; Ceylon, 589; Indo-China, 10,500; Java, 15,000; Borneo, 68; Sumatra, 896; Japan, 40,000; Canada, 20; Cuba, 1,297; Jamaica, 115; United States of Colombia, 4,152; Argentine Republic, 12,000; Algeria (in 26 years), 109; United States of America: mainland of America, 146; Hawaiian Islands, 764; Porto Rico, 17; Guam, 19; Philippine Islands, 2,330; Canal zone, 7.

THE SIXTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

BUDAPEST, AUGUST 29TH TO SEPTEMBER 4TH.

(*Continued from page 1077.*)

Section of Surgery.

The surgeons succeeded in working their way almost completely through a very long programme, and the number of absentees compared favourably with that in the other sections. The discussion on appendicitis took up a considerable time, and there is no doubt that this discussion attracted more interest than any of the others. A brief account of it has already been given.[1]

Asepsis in Operations.

Manninger (Budapest) dealt with the present doctrines and methods of applying asepsis in operations. As far as the instruments were concerned, he had little to say. The disinfection of the skin and area of the wound claimed his attention. Hands were washed for five minutes in alcohol, alcohol and ether, acetone-alcohol, or iodized benzin. These substances tanned the skin, and in this way prevented the infective organisms from being given off. The disadvantage of this method lay in the fact that the tanning only lasted for a short time, and he therefore turned his attention to the second modification of recent times—namely, of first washing the hands in hot water and soap, then rinsing with sublimate and alcohol, lysoform, or bacillol and alcohol. The results obtained in this way were fairly satisfactory. But since an absolute sterilization of the hands could not be obtained chemically, he considered it an advance that rubber gloves had been introduced. The gloves should be applied to the dried—that is, tanned—hands, and with practice and care tearing could be avoided. The same remark applied to rubber protection of the skin around the wound—for example, desma-gummit. He regarded hand varnishes as poor substitutes for gloves. In order to avoid infection of the wound by droplet infection through the air, face masks and curtains separating the head of the patient from the area of operation had served a good purpose. The prevention of infection through ligatures, etc., had been furthered by the introduction of the treatment of silk in weak antiseptics. Secondary infection could be avoided by keeping the ligatures in Lanz's ligature pots. Claudius's method of sterilizing catgut was in his opinion the best, but necessitated a special autoclave. This method depended on applying alcohol vapour to the catgut threads.

After-treatment of Laparotomy.

Kümmell (Hamburg) recorded his results obtained by allowing his laparotomy patients to get up early. The reason for wishing to get them up within the first few days was primarily to prevent pulmonary emboli. Formerly, when his patients got up late, he lost 10 per cent. of his laparotomy cases from embolus, while since he had used this method the mortality had sunk to 1.9 per cent. In order to carry it out, it was necessary to ensure a perfect anaesthesia, rapid operating, with as little loss of blood as possible, and absolute asepsis. Apart from a feeling of tension in the wound, the patient did not experience any unpleasant sensations on getting up early. The action of the intestines usually was satisfactory, and in this way a most disturbing symptom was avoided; there was no need to use a catheter, and the respiration was free, so that bronchitis and pneumonia were avoided. The patients were induced to perform any sort of movement from the first, while those patients who were capable of doing it, and were willing, were allowed to sit up in a chair on the first day. At times the patients attempted to walk on the first day. All his patients got up on the first or second day, or at latest on the third day. They walked about quite early, and he mentioned that some herniotomy

[1] British Medical Journal, September 18th, p. 798.

patients were seen walking about the garden on the third day, just like normal persons. After a laparotomy he allowed his patients to go into the garden on the fifth day. Only a few patients were too feeble or too nervous to carry this treatment out.

Surgery of the Cerebellum.

HILDEBRAND (Berlin) spoke of the surgery of the cerebellum. The diagnosis had, he said, become much more certain during recent years. The symptoms pointing to disturbance in the posterior cranial cavity were double papillitis, headache (both occipital and frontal), vomiting, disturbances of pulse and respiration, and flaccid paralysis or paresis. In addition to these, he mentioned giddiness, ataxy, asynergia, nystagmus, asthenia, etc. Extracerebellar disease was characterized by prominent nerve symptoms, while intra-cerebellar tumours often failed to present such symptoms. It was possible in many cases not only to determine the side affected, but to localize the lesion, and even to diagnose its nature. He discussed the method of operating, and on the whole expressed himself in favour of an operation in two stages, with removal of the bone of the cranium, rather than the replacing of the bone-skin flap. In cysts he had lost only 1 patient out of 20 cases; in tuberculous affections, 11 patients out of 20 operated on died, while 2 were completely cured. He had operated on 39 patients for gliomata; 22 had died from the operation and 17 had recovered, but it was uncertain how many had remained well. Out of 30 tumours of the neighbourhood of the pons, 7 had died. He also spoke in favour of a trial incision.

Surgical Treatment of Epilepsy.

KRAUSE (Berlin) spoke of the surgical treatment of epilepsy. He first referred to complete cures effected by the removal of the Gasserian ganglion in cases of reflex epilepsy of traumatic origin. Next he dealt with Jacksonian epilepsy. In some cases of infantile paralysis, in which the degenerative changes led to complete idiocy, operative interference by Horsley's method yielded good results. He dealt in some detail with the value of applying faradic currents for the purpose of determining the area affected in Jacksonian cases. He also illustrated the value of operative interference by details of various cases. Krause concluded with a review of his results in three categories—of cures, improvements, and failures. Certain cases were certainly completely cured.

Surgery of the Brain and Spinal Cord.

MACEWEN (Glasgow) discussed the surgery of the brain and spinal cord. He laid stress on the fact that, while syphilis might be amenable to mercury and iodide of potassium, syphilitic tumours of the brain, when the neoplasm had an avascular structure, could never be cured by drugs, but must be attacked surgically. The same remark applied to tuberculous tumours. He next described a method of removing solid tumours and encysted abscesses by making a free opening and allowing the intracranial pressure slowly and automatically to deliver the tumour intact through the opening. Next he dealt with sarcoma of the brain, some cases of which were available for surgical removal. In regard to prognosis, much depended on the nature of the surrounding capsule. In the last place, he spoke of infective leptomeningitis, and related some apparently hopeless cases which got well after operation. This communication was spoken in English deliberately and slowly, and was much applauded.

Surgical Treatment of Pulmonary Phthisis.

SKEVOS ZEROS (Athens) described his method of treating pulmonary phthisis surgically. He incised the thorax, broke down the pleural adhesions, washed out the pleura with a large quantity of a solution of perchloride of mercury (1 in 3,000), and then sewed up the chest wall. The solution was heated to 45° C. Two patients in whom he had carried out this procedure had recovered completely. He also recorded some animal experiments which tended to show that such a procedure was well tolerated, as was also the removal of one lung.

Chronic Pancreatitis.

MAYO ROBSON (London) dealt with the chronic form of pancreatitis. Inflammatory enlargements occurred apart from the presence of gall-stone trouble. He described the symptoms, the differential diagnosis, and stated that the operative treatment yielded excellent results. Gall stones, if present, should be removed before they had produced complications, and duodenal ulceration should be treated by gastro-enterostomy. If, after a fair trial of general treatment, the symptoms of pancreatic disturbance persisted and increased, surgical treatment should be considered.

SUBBOTITCH (Belgrade) regarded chronic pancreatitis as a much more common disease than was usually supposed. It was usually caused by an infection of the efferent ducts, and was often associated with cholelithiasis. The interstitial connective tissue was increased, hypertrophied, and sclerosed, while the glandular substance disappeared. The head of the pancreas was most frequently attacked. The symptoms were pain, wasting, and at times palpable tumour at the head of the pancreas. Steatorrhoea, glycosuria, and Cammidge's reaction might also be of diagnostic value. The surgical treatment yielded excellent results.

SECTION OF OBSTETRICS AND GYNAECOLOGY.

Puerperal Fever.

The discussion on the treatment of puerperal fever lost in interest by the absence of Bumm (Berlin) and v. Herff (Basle) from the Section on Monday morning. Pinard (Paris) was the only remaining lecturer on the programme. He described the preventive treatment as being that sketched out by Semmelweis, Tarnier, and Pasteur, while the curative treatment which he had found valuable included intrauterine injections, curetting and antistreptococcic serum.

Myomata.

MARTIN (Berlin), who introduced a debate on this subject, expressed the opinion that the occurrence of pregnancy in myomatous uteri was so common that it disproved the older doctrine that myomata excluded an intrauterine pregnancy. The modern ideas as to the causes of serility further disproved this doctrine. When women with myomata married late, they frequently became pregnant soon, and in these cases the menopause set in late. He regarded the cases in which no conception occurred until a myoma was removed as rare, and stated that these cases might be explained in other ways. SCHAUTA (Vienna) spoke of the incidence of myomata associated with pregnancy, the effect which the growth had on the course of pregnancy and labour, and the best means of treatment. He did not consider that myomata gave rise to complications in labour in the vast majority of cases, and therefore any active treatment during pregnancy was generally unnecessary. ENGSTRÖM (Helsingfors) considered that a reduction of the size of subserous and intramural myomata during the puerperium was not always evident, and, indeed, that myomata showed a varied behaviour in this respect. At times the reduction in size was extraordinary, a tumour of the size of a man's head shrinking to that of a hen's egg. It was, however, possible that the myoma, thus reduced, might take on fresh growth after involution was complete. He had not observed a complete disappearance of a myoma during pregnancy and post puerperal period, but he thought such an occurrence might be possible. The shrinking was due to fatty degeneration with central necrosis. After dealing with the process of infection of myomata, he considered the effect of the multiple subserous myomata in causing atony of the uterus and in leading to fatal haemorrhage. Polypoid myomata not infrequently caused severe haemorrhage, but this was not the rule. POZZI (Paris), dealing with fibromata of the uterus in their relation to pregnancy, said he found that some of these tumours increased in size during pregnancy, but rarely to such an extent as to endanger life. He described modifications in the structure, either of the nature of a simple oedema or of an actual increase of the elements of the tumour. Cystic changes were the most frequent. Suppuration and gangrene of fibromata had been observed. Lastly, he described changes in the situation of the tumour, which at times occupied the abdominal cavity, while at others it might lie entirely inside the pelvis. The effect of the tumour on pregnancy was very variable. Retroversion and incarceration of the uterus might supervene, but abortion took place only in between 5 and 6 per cent. of

his cases, while premature labour was only slightly more frequent. In regard to treatment, he was of opinion that in the majority of cases no special intervention was needed. The life of the mother should not be exposed to unnecessary danger. In serious cases the practitioner should wait till full time and deliver by Caesarean section. He did not approve of artificial induction of labour at an early stage.

Anaesthesia in Obstetrics.

In the course of a discussion on anaesthesia Tuffier (Paris) spoke in favour of lumbar anaesthesia; Krönig (Freiburg) dwelt on the advantages of lumbar anaesthesia with a solution of stovaine of the same specific gravity as that of the spinal fluid. He recognized the work done in this respect by A. E. Barker. He also advocated morphine-scopolamine partial narcosis, and declared himself in favour of a mixture of ether and chloroform rather than either of these anaesthetics alone for minor gynaecological operations. Among the other papers read at this section the more interesting included one on the induction of premature labour by laminaria bougies, by Sir William Sinclair (Manchester); one on disturbances of development in their relation to obstetrics and gynaecology, by K. Hegar (Freiburg); and one on extrauterine pregnancy, by Tóth (Budapest).

Section of Ophthalmology.

Trachoma.

Greeff (Berlin) opened a discussion on trachoma. His address was in the main a more detailed description of the small parasitic bodies which he had found in trachoma cases, and to which he ascribed a causal relation to the disease, than was given in his article in the *Deut. med. Woch.*[1] He adhered to his belief that the parasites were the cause of trachoma, and confirmed his previous observations, that they were to be found both in the secretion and in the tissues of the affected eyes. Herzog (Berlin) related his researches on trachoma, undertaken in the ophthalmic clinic in Budapest. He also had observed Greeff's parasites in connexion with the disease, but was inclined to assume a somewhat reserved attitude as to their significance. In any case he did not consider these bodies as bacteria, though he was unable to determine at present what form of parasite they represented. Gallenga (Parma) also discussed these round bodies, which he associated with trachoma. Heymann (Breslau) stated that he had observed these bodies, but that they were to be found in healthy as well as trachomatous eyes. He preferred to refer to them as Halberstädter and Prowazek's bodies, as these observers had described them independently and before Greeff had done so. He was of the opinion that these bodies were not the cause of trachoma. This statement caused some sensation. Goldzieher (Budapest) limited his remarks to some points in connexion with the pathology of trachoma. He also recorded some of his experiences in the treatment of severe cases with gonococcal vaccines. Sulzer (Paris) complimented the Hungarian Government on the excellent organization of the State control of trachoma cases, and stated that the regulations enforced in Hungary might well serve as a pattern or other countries. MacCallan (Cairo) described the distribution of trachoma and other ophthalmic diseases in Egypt, and also the measures which had recently been adopted for the better treatment and control of trachoma cases.

Theory of Vision.

Edridge-Green (London) read an important paper on the theory of vision. He stated that a ray of light impinging on the retina liberated the visual purple from the rods, and a photograph was formed. The rods were concerned only with the formation and distribution of the visual purple, not with the conveyance of light impulses to the brain. The decomposition of the visual purple by light chemically stimulated the ends of the cones (very probably through the electricity which was produced), and a visual impulse was set up, which was conveyed through the optic nerve fibres to the brain. If it were possible, in a case in which the spectrum appeared of similar length and brightness to both, for a normal-sighted person and a colour-blind person to exchange eyes, the normal-sighted would still see colours properly, and the colour-blind would still be colour-blind. There were cases in which the visual purple was differently constituted, and was not sensitive to certain rays at one or both ends of the spectrum. The character of the impulse set up differed according to the wave-length of the light causing it. Therefore, in the impulse itself, there was the physiological basis of the sensation of light, and in the quality of the impulse the physiological basis of the sensation of colour. The impulse being conveyed along the optic nerve to the brain, stimulated the visual centre, causing a sensation of light, and then passing on to the colour-perceiving centre, caused a sensation of colour. But though the impulses varied in character according to the wave-length of the light causing them, the colour-perceiving centre was not able to discriminate between the character of adjacent impulses, the nerve cells not being sufficiently developed for the purpose. At most, seven distinct colours were seen, whilst others saw in proportion to the development of their colour-perceiving centres, only six, five, four, three, two, or one. This caused colour-blindness, the person seeing only two or three colours instead of the normal six, putting together as alike colours which were seen by the normal-sighted to be different. In the degree of colour-blindness just preceding total, only the colours at the extremes of the spectrum were recognized as different, the remainder of the spectrum appearing grey. In the discussion, von Tschermak (Vienna) stated that there was not a single fact of deduction in the paper which he could not support from his own observation. Together with Hering and Hess, he had demonstrated that foveal and extra-foveal vision only differed in degree. Hering, his old master, had always only associated his theory of vision with central processes and not with photo-processes of the retina. Hering realized that there were many cases of colour-blindness which could not be explained by his theory.

Eye Symptoms in Hypophysis Tumours.

Uhthoff (Breslau) discussed the eye symptoms in hypophysis tumours and in acromegaly. Temporal hemianopia was the most common symptom. Typical papillitis (choked disc) was met with in about 5 per cent. of all cases and ill-defined optic neuritis was about as frequent. Paralysis of the intrinsic muscles occurred in about 10 per cent., atrophic discoloration of the papilla in about 20 per cent, central scotoma in a few cases and nystagmus in about 6 per cent. He attempted to determine the frequency of these eye symptoms in all cases of acromegaly and tumours of the hypophysis, and concluded by speaking of the trophic symptoms and the disturbances of growth associated with these diseases.

Section of Diseases of Children.

Scrofula.

Escherich (Vienna) described scrofula as that form of tuberculosis which, attacking children during the first three years of life, produced catarrhal lesions of the skin and mucous membranes and was associated with a lymphatic constitution. The signs of this constitution were over-development of the body as a whole, pasty skin and flabby adiposity, tendency to eczema and catarrh of the mucous membranes, indolent enlargement of lymphatic glands and, at times, of the spleen and thymus. The tuberculosis which developed on this basis was characterized by a marked hypersensibility (allergy) of the skin to tuberculin toxin. The treatment of the condition should include, besides the exhibition of iodides and cod-liver oil, attempts to immunize with old tuberculin and other forms of tuberculin preparations.

Preservation of Mother's Milk.

Escherich also discussed Mayerhoffer and Pribain's method of preserving mother's milk. The milk preserved according to this method is stated to keep good for an indefinite period, and the speaker considered that it might prove extremely useful in the treatment of intestinal disturbances in artificially fed infants. The practitioner could write a prescription for mother's milk which the chemist could make up.

Sleep in Children.

Deutsch (Budapest) read an interesting paper on the conditions of sleep of a large number of children in his town. He showed that a large percentage of these children

[1] See British Medical Journal, 1909, p. 918.

lived under conditions which must be regarded as bad from every point of view. He mentioned the fact that 3.8 per cent. of the children were given alcohol before going to sleep. From his figures he drew the deduction that the majority of both normal and abnormal children slept on the side. Young children who were normally developed usually awoke in a position different from that in which they had gone to sleep, while older normal children usually awoke in the same position. That was not the case in abnormal children such as blind, deaf mutes, etc., while no difference was seen in the percentages of the normal and abnormal children who slept through the night without waking. This worked out at 33 to 34 per cent. Of the normal children, 30 per cent. spoke, 16 per cent. micturated, 30 per cent. ground their teeth, and 25 per cent. snored during sleep; while among the abnormal children only 3 per cent. micturated and 6 per cent. ground their teeth. Of the normal 68 per cent., and of the abnormal children 86 per cent, dreamt. Further details were given, especially in reference to the anomalies of sleep and dreaming in children of varying degrees of intelligence. The blind and deaf-mutes from birth frequently dreamt of seeing and hearing.

SECTION OF NEURO-PATHOLOGY.

Spinal Tumours.

OPPENHEIMER (Berlin) dealt with the advances made during the past few years in the diagnosis and treatment of spinal tumours. No distinct progress had been made with regard to the differential diagnosis between meningeal processes and tumours of the cord. He had more to say on the diagnosis of intramedullary and extramedullary tumours. At the outset, he admitted that no reliable sign was known which could distinguish between these two classes. The most valuable sign was the constancy of the "upper pole" symptom. He pointed out, however, that the collection of the liquor above the tumour and the circumscript serous meningitis, which often accompanied this, might cause an ascent and a fluctuation of the upper niveau, and therefore of the symptoms fixing this point. He cited a case in which it was impossible to determine whether the tumour arose from the cord or from the meninges at the operation, and a second case in which the tumour was regarded as being an extradural one when the cord was exposed at the autopsy, but which on more minute examination proved to be an intradural tumour. In differentiating between tumours and serous spinal meningitis, he laid stress on the causes of the disease, the nature of the same, and its peculiar characteristics, and stated that he regarded Horsley's differential criteria as unreliable. He denied the occurrence of "pseudo-tumours," and then turned to the question of segment diagnosis. He concluded that, in spite of the difficulties which still obtained in respect to diagnosis, the advances in surgical results were undeniable. His own cases included 25 operations with 13 recoveries. He also dealt with the indications for operation.

Alcohol Injections for Neuralgia.

SICARD (Paris) spoke of the treatment of facial neuralgia by injections of alcohol. He used alcohol containing 2 per cent. of menthol and 1 per cent. of novocain. The injections were carried out either into the nerve trunk in the facial portion or into the medial or deep portions of the nerve. This was done either from outside or through the buccal surface. Apart from some resulting oedema no gross changes were effected by the injections. The cure lasted from one to two years, and could be regained by renewed injections. The method depended on actual injection into the nerve trunk, and the only control that this had effected was the occurrence of persistent anaesthesia of the skin and mucous membrane supplied by the nerve.

Nucleinate of Sodium in General Paralysis.

DONATH (Budapest) spoke of the treatment of general paralysis of the insane by means of injections of nucleinate of sodium. He had previously observed that beneficial results were obtained in this disease by infusions of physiological saline solution. In order to attempt to oxidize the toxic products giving rise to the symptom complex he chose nuclein preparations. He used 2 per cent. each of nucleinate of sodium and chloride of sodium in sterile water, care being taken that no dissociation had taken place. The result of the injection was a raising of the temperature to 38.5° C., or even 40.5° C., and an increase in the number of leucocytes. As a rule, eight injections sufficed. The occurrence of an aseptic abscess was not undesirable. This treatment, he considered, could be undertaken when the patient had been suitably treated with mercury previously, or even if no specific treatment had been carried out. In all he had treated 21 cases in this way; 10 of these had been so far improved that they were again able to follow their occupation, in some cases for two years. In 5 further cases a marked improvement, both subjectively and objectively, had been achieved. The remaining 6 cases had not been influenced by the treatment. In the discussion, HALBAN (Lemberg) spoke of permanent cures of general paralysis of the insane having been achieved by intercurrent suppuration attended by high fever. He supported the idea of Donath that his injections might produce a similar effect on the process.

NINTH INTERNATIONAL VETERINARY CONGRESS.

[FROM OUR SPECIAL CORRESPONDENT.]

THE principal veterinary surgeons of the world met recently at The Hague, and after lengthy discussion they passed a number of resolutions which, when they become law, will prove of great benefit to the community at large. H.R.H. Prince Henry of the Netherlands, Duke of Mecklenburg, took a great interest in the proceedings and was present on several occasions. W. C. Shimmel, Professor of the State Veterinary School, occupied the President's chair. The British representatives, as regards numbers, compared very unfavourably with those of other countries; there were fifty of them present, amongst whom were Sir John McFadyean, Professor J. R. W. Dewar (Edinburgh), Professor A. E. Mattam (Dublin), Professor W. O. Williams (Liverpool), Professor Wooldridge, Professor Bradley, and Professor Hobday.

Cancer.

Dr. E. F. BASHFORD, Director of Imperial Cancer Research, read a paper on the etiology and pathogeny of malignant new growths, especially of cancer. His demonstration by the aid of lantern slides was greatly appreciated.

Sanitary Control of Milk and Meat Supplies.

The sanitary control of milk and obligatory systematic inspection of meat provided a subject of general interest, and some good papers were read.

Mr. A. D. MELVIN, D.V.S., chief of the Bureau of Animal Industry at Washington, presented a report on the meat inspection service of the United States Government. The position taken by the United States Government authorities is very well illustrated in the following principles:

(*a*) The fundamental thought is that meat should not be used for food if it contains tubercle bacilli, if there is a reasonable possibility that it may contain tubercle bacilli, or if it is impregnated with toxic substances of tuberculosis or associated septic infections.

(*b*) On the other hand, if the lesions are localized and not numerous; if there is no evidence of distribution of tubercle bacilli through the blood, or by other means, to the muscles, or to parts that may be eaten with the muscles; and if the animal is well nourished and in good condition, there is no proof, or even reason to suspect, that the flesh is unwholesome.

(*c*) Evidences of generalized tuberculosis are to be sought in such distribution and number of tuberculous lesions as can be explained only upon the supposition of the entrance of tubercle bacilli in considerable numbers into the systemic circulation. Significant of such generalization are the presence of numerous uniformly distributed tubercles throughout both lungs; also tubercles in the spleen, kidneys, bones, joints, and sexual glands, and in the lymphatic glands connected with these organs and parts, or in the splenic, renal, prescapular, popliteal, and inguinal glands, when several of these organs and parts are coincidentally affected.

(*d*) By localized tuberculosis is understood tuberculosis limited to a single or several parts or organs of the body without evidence of recent invasion of numerous bacilli into the systematic circulation.

These principles having been adopted, the following rules have been promulgated for the guidance of inspectors in disposing of tuberculous carcasses:

Rule A requires that the entire carcass shall be condemned under the following conditions:

When it was observed before death that the animal was suffering with fever.

When there is a tuberculous or other cachexia, as by anaemia and emaciation.

When the lesions of tuberculosis are generalized.

When the lesions are found in the muscles or intermuscular tissue, bones, or joints.

When the lesions are general in one or both body cavities.

Rule B.—An organ or a part of a carcass shall be condemned when it contains lesions of tuberculosis.

When the lesion is immediately adjacent to the flesh, as in the case of tuberculosis of the parietal pleura or peritoneum, not only must the membrane or affected part be condemned, but also the adjacent thoracic or abdominal wall.

When it has been contaminated by contact with tuberculous material.

An organ shall be condemned when the corresponding lymphatic gland is tuberculous.

Rule C provides in substance that carcasses showing only limited or isolated lesions of tuberculosis without evidence of progressive origin may be passed for food after the parts containing the localized lesions have been removed and destroyed.

Rule D.—Carcasses which fall in between the two extremes noted in the above Rules A and B are allowed to be rendered into lard or tallow, if the distribution of the lesions is such that all parts containing tuberculous lesions can be removed before rendering. After the tuberculous areas are removed from such carcasses, they must be cooked at a temperature not lower than 220° F. for not less than two hours.

In the concluding paragraph of this address it is easy to trace the well-developed commercial instinct of the U.S.A. Government, which is making strong endeavours to re-establish the confidence of foreign nations in their export meat trade, and it seems to suggest that the recent disclosures in connexion with the meat-packing industry are not likely to be repeated, as is seen in the following extract:

"The law of June 30th, 1906, absolutely prohibits the use of all preservatives or colouring matters which are unwholesome. The Secretary of Agriculture in carrying out this law has declared that the only preservatives which may be used on meats or meat food products for inter-State trade are common salt, sugar, wood smoke, pure spices, and saltpetre. With regard to shipments to foreign countries, the regulations provide that upon written direction of the foreign purchaser preservatives may be used which do not conflict with the laws of the country to which the particular meat food products are to be shipped. If, for example, a foreign country permits the use of borax in meat food products, it could hardly be expected that the United States Government would attempt to prevent the use of this preservative in foods which were to be shipped to such a country. If that country, however, had a law prohibiting the use of borax, a strict inspection would be made to see that this law was not violated?" "I think," said Mr. Melvin, "this will make it very plain to all of you that the United States Government is not only endeavouring to protect its own citizens by every legitimate means, but that we are also doing everything in our power to uphold the laws of the countries to which our meat food products are shipped."

Mr. A. M. Trotter, Glasgow abattoir, strongly advocated State control of milk and meat supplies. He said:

> In the control of our milk supply the medical officer of health claims to be the sole directing official on whom should devolve the responsibility of supervising the milk supply in all its complex ramifications, thus relegating the veterinary inspector to a position purely auxiliary—indeed, of little better status than a layman. This, of course, must be checkmated, and every effort exerted to ensure that the supervision of the health of the animals will be entrusted to veterinarians.

He also expressed regret, in the interest of public health, that the work of meat inspection was not entirely in the hands of veterinarians; in many instances it was confided to inspectors of nuisances and sanitary inspectors—men, no doubt, inspired with the desire to carry out the work faithfully and well, but unfortunately not equipped with the requisite training.

Tropical Diseases of Domestic Animals.

The prophylaxis of tropical and sub-tropical diseases of domesticated stock was ably dealt with by Dr. A. Theiler, C.M.G., Veterinary Bacteriologist to the Transvaal Government, who used the term "tropical disease" to designate the maladies occurring in domesticated animals of Africa. For the purpose of his deliberations he selected the following grouping to serve as his base:

A. Diseases transmitted by winged insects (flies and mosquitos):
1. Trypanosomiases. 2. Ultravisible vira.
B. Diseases transmitted by ticks:
1. Piroplasmoses. 2. Spirochaetoses. 3. Ultravisible vira.

Dr. Theiler from practical experiments expressed the conviction that a fly and an animal were required for the completion of the life cycle of a trypanosome—namely, the host and the intermediary host. Animal and fly formed a chain of two links necessary for the maintenance and propagation of the disease. It was evident that when this chain was broken or unlinked the diseases must disappear. To summarize, the objects of the prophylaxis of diseases carried by flies and mosquitos are:

1. To save the greatest number of exposed susceptible animals by rendering them immune, and also by fly-proof seclusion.
2. The eradication of the disease by destroying the reservoir or the host.

The prophylaxis of diseases carried by ticks can be summarized as follows:

A. Diseases in which the immune animal does not act as a reservoir—East Coast fever, heartwater.
(*a*) To save the greatest number of animals exposed to infection by moving them out of infected areas in such a way as to leave the infected ticks behind.
(*b*) Eradication of the disease by starving.
B. Diseases in which the immune animal acts as the reservoir—*P. pigeminum*, *P. equi*.
(*a*) To save the greatest number of exposed susceptible animals under present conditions recourse can be had to moving out of infected areas, and to inoculation within infected areas.
(*b*) Eradication of these diseases impracticable just now under South African conditions. Theoretically possible by starving the ticks.
Importation of cattle out of tick disease infected countries into clean but tick infected countries, or into clean countries in which the ticks can thrive should be prohibited.

Dr. Theiler corrected the impression that piroplasmosis of sheep existed in South Africa; its previous record was based on an error in the diagnosis.

State Control of Serums.

The Governmental control of serums and bacterial products, and their preparation by Government, was keenly discussed.

Mons. E. Leclainchie (Toulouse) stated that at the present moment the preparation of microbic products was in France almost exclusively confided to the inventors of the methods and their pupils. This restriction evidently offered great advantages, for endless modifications must be made in the original processes in order to make them constantly more adapted to practical use. The question of direct preparation by Government has been examined, and solved in the negative. The French Government was of opinion that it could not accept the risks inseparable from the utilization of the different methods.

Dr. H. E. Reeser (Rotterdam) was of opinion that the preparation of serums by the State was preferable to that by private manufacturers. Legal provisions for the preparation, distribution, and preservation of serums and bacterial products were unnecessary when they were prepared by the State, except in so far as the provisions applied to the institute itself. After a heated discussion, the Congress came to the conclusion that the control of serums and bacterial products should be in the hands of the Government, and sold by them only to members of the medical and veterinary professions.

Other Subjects.

The following subjects were also discussed:

The diagnosis of infectious diseases by means of the recently discovered reactions of immunity.
Etiology and pathogeny of malignant tumours, especially of cancer.
Vaccination against tuberculosis.
Anatomo-pathological and histo-pathological diagnosis of rabies.

Pathology and therapeutics of streptococci infections in the domestic animals.
Teaching of zootechny.
Hygiene in the maritime transport of cattle.
Teaching and laboratories for research.

Next Meeting of the Congress.

The next International Veterinary Congress will be held in London in 1913. It is earnestly hoped that the British Government will grant an adequate sum of money for the purpose of receiving foreign guests in a suitable manner. There is no doubt that the British members of the Congress have received great benefit from the discussions, but it should certainly be mentioned that the committee had not appointed efficient interpreters for their benefit, and that it was exceedingly difficult to obtain any information.

VACCINATION AND EXEMPTION IN 1908.

IN order to note the effects of the operation of the Vaccination Act of 1907, which provided increased facilities for obtaining exemption, we have—in continuation of the table published in the JOURNAL of July 4th, 1908, p. 38, showing the number of exemptions from vaccination in the places mentioned during the first quarter of 1907 and 1908 respectively—tabulated a series of supplementary returns from a number of unions and districts in various parts of the country. Relating to the second half of 1908 (July 1st to December 31st), the figures in the accompanying table show the births, vaccinations, and exemptions. Some months ago it was stated in Parliament that the total exemptions for the whole year 1908 amounted to 17.2 per cent. of the births. The actual figures were:

	Births.	Exemptions.	Percentage.
1908... ...	942,611	162,800	17.2

In view of the enormous efforts of the antivaccinators to entice parents into making declarations of exemption, it is almost surprising that the number of exemptions is not larger, especially when the way of escape is now made so extremely easy. In the absence of small-pox, the numbers of objectors will probably increase unless something more is done to combat the energetic propaganda against vaccination on a larger scale than has hitherto been attempted.

A glance at the table shows the same peculiar feature which was illustrated in the table published in July, 1908, giving figures for the first quarter of that year. The point to which we refer is the curiously uneven distribution of "conscience" in this matter in different parts of the country. Taking the West Derby Union (Liverpool), which is the largest union in the country, it will be noted that only 167 exemptions were taken out, though there were no less than 9,065 births in the half-year. Thus the exemptions were only 1.8 per cent. of the births. Keighley provides a great contrast and maintains its reputation as an antivaccination centre. Here, out of 560 births there were no less than 451 exemptions, or 80.5 per cent. Taken generally, the table shows that the larger towns and centres of population are less disposed to give up vaccination than the rural and more scattered areas. The metropolitan areas included in the table—Hampstead, St. George's, Bermondsey, and Marylebone—and such unions as Hull, Plymouth, West Derby, Manchester, and Leeds, all show a comparatively small amount of dissent. Even in the same union different but adjacent districts vary considerably in their attitude towards vaccination.

Until completed returns are issued it will not be possible to estimate the precise effects of the new Act. Many of the cases now returned as exempted would have been returned as defaulters before 1907, as in a number of places there was much laxity in the administration, and exemptions were not always obtained where vaccination was neglected. It is obvious, however, that a much larger number of children are left unprotected, and this must sooner or later be a matter of grave anxiety to the health authorities in this country. A considerable number of parents are merely indifferent and careless, and an effort should be made at least to bring before the notice of such as these the serious importance of the subject.

Return of Vaccinations and Exemptions and the Number of Births in Certain Unions, July 1st to December 31st, 1908.

Union.	Births.	Vaccinated.	Exempted.
Hampstead	628	468	65
St. George's	988	802	48
Bermondsey	2,037	1,455	86
Marylebone	1,972	1,553	69
West Derby (Liverpool) ...	9,065	6,772	167
Leeds	3,260	2,293	202
Hull	1,103	745	56
Plymouth	1,315	1,009	71
Manchester	2,019	1,223	57
Rochdale	1,436	681	653
Bradford	2,314	1,455	544
Stoke-on-Trent	2,748	1,625	359
Bingham	146	100	35
Basford	2,621	1,298	875
Worksop—			
Worksop District	307	108	167
Norton ,, ...	248	112	79
Charlton ,, ...	324	193	53
Chester-le-Street—			
No. 1 District	769	337	227
No. 2 ,, ...	598	343	64
Brighton—			
Hove District	294	194	48
Preston ,, ...	289	145	91
Shoreham ,, ...	249	106	126
Steyning ,, ...	56	36	9
Gainsborough—			
Gainsborough District ...	276	85	167
Marton ,, ...	52	14	7
Misterton ,, ...	111	47	48
Scotter ,, ...	44	17	20
Colchester	499	305	92
Ashby	766	284	367
Chedworth	42	31	8
Bibury	52	45	2
Droxford	136	110	18
Ripon	154	119	14
Lewes—			
Lewes District	126	37	75
Chailey ,, ...	96	37	37
Ibstock (Leicestershire) ...	203	28	139
Chatteris	103	57	36
Market Bosworth	68	38	22
Yeovil	311	161	113
Gosport	246	201	22
Bideford	240	106	64
Keighley	560	50	451
Bingley	149	20	117
Haworth	80	11	67
Newark	399	156	183
Bromley	1,092	804	131
Gloucester	721	227	333
Bristol	4,099	2,086	518
	45,411	28,129	7,202

OPENING OF THE WINTER SESSION IN THE MEDICAL SCHOOLS.

In our issue of last week an account, beginning on p. 1077, was given of such events as marked the commencement of a new medical year at the majority of the medical schools. References to some further occurrences of the same order elsewhere follow. In Edinburgh classes in the Faculty of Medicine of the university and in the Extra Academic School commenced on October 1st without formal ceremony of any kind, and a similar course appears to have been adopted at varying dates throughout Scotland, as also at the universities of Durham, Sheffield, Wales, and the various medical centres in Ireland, so that medical study is now in full progress once more throughout the British Isles.

UNIVERSITY OF MANCHESTER.

Term commenced in the Medical Faculty of Victoria University on October 1st, being inaugurated by a ceremony at which Dr. G. R. Murray, Professor of Systematic Medicine in the University, delivered an address. In its course Dr. Murray pointed out that no curriculum for medical students could be drawn up for all time. The principles of true education remained the same, but their practical application to medical training must be readapted from time to time as fresh developments in medical science and practice took place. A curriculum which fulfilled the requirements of to-day would not do so five or ten years hence. Too frequent changes were not desirable, but it was evident that from time to time methods of instruction and examination should be reviewed so as to bring them into line with recent advances in knowledge. For this purpose it would be a great advantage to have a conference occasionally at which those engaged in teaching various subjects might meet to discuss the best methods of education and the true relationship of the different parts of a medical student's education to each other. There was a tendency to cling to old empirical methods of teaching long after the original reason for their adoption had passed away. One object always to be kept in view was that of training men how to observe, so that they might continue to go on learning all their days. Lectures accompanied by the exhibition of specimens and lantern demonstrations had an added value, in that they helped to bring out a capacity for mental visualization of things heard and read. It was evident that either the present five years' curriculum was too short or that too much was crowded into it. Taking the former view, the new University of Bristol had wisely fixed from the outset five and a half years as the minimum period; while the University of Wales had gone further and imposed a curriculum of six years. In any case, in dealing with the teaching of the preliminary sciences it should be borne in mind that the ultimate object was the training of medical men. In a five years' curriculum they could not be taught these subjects as if they were on their way to a degree in them. The orator also pointed out that those who went into general practice were apt to consider that they had no opportunities for making observations and thus adding to the general stock of knowledge. This was not the case, for many important phases of disease could be better observed in general practice than in hospital wards. As examples of what could be done, he instanced the splendid work done by Dr. James Mackenzie in the investigation of cardiac disease, and the accurate and continued observation of cases of Graves's disease carried out by Mr. A. Maude of Westerham. A hopeful sign of the times was the tendency to organize definite campaigns against certain diseases such as malaria, yellow fever, sleeping sickness, tuberculosis, and cancer. Similar organized attacks might well be made on other groups of diseases such as pneumonia. There was a great need for research scholarships in medicine, and in the early future it seemed likely that, after finishing their ordinary training, many more students would devote some time to special work such as was done by those who intended entering the sanitary service. There was a good attendance, and Professor Murray received a most cordial reception.

UNIVERSITY OF LIVERPOOL.

The inauguration of the session of the Medical Faculty of the University took place on October 5th, when Mr. C. A. Ballance, Surgeon to St. Thomas's Hospital, delivered an address. After a full and appreciative reference to Liverpool as a city and port famous not only for its commerce and shipping, but also by reason of the literary and intellectual eminence attained by many of its citizens, he said that the university had its origin in the wisdom, foresight, and enterprise of the citizens, and its work already gave assurance of future greatness. The fact that universities did not consist merely of bricks or stones and mortar had been forcibly brought home to him in a conversation with Mr. Roosevelt, when he remarked on the beauty of the marble buildings of Harvard University, which cost millions of pounds. "Yes," replied Mr. Roosevelt, "the buildings are very fine, yet in the case of universities in general, how much better it would be to spend money not first on buildings, but to endeavour to induce the wisest and greatest men in the world in the various branches of knowledge to come to fill the professional chair!" Proceeding to sketch the remarkable evolution and advance of medical and surgical science which he had himself witnessed, the lecturer said that much of what was now current surgical practice was, when he was a student, either altogether unknown or too hazardous to attempt. Equally striking had been the advance in pathology and medicine, notably the knowledge of infectious diseases and of natural and acquired immunity. Time would only permit of a mere mention of the fascinating story of the fight against tropical diseases in which the Liverpool school had played so splendid a part. The pageant of medicine and surgery of the past thirty years had been the most glorious of all time, and his object in his review was to stimulate the ambition of the students, to fire their energies, and to clench their resolves to take a manly and noble part in the conflict and victories of the future. Their profession demanded not a minimum of general knowledge but the maximum which could be obtained, for to succeed as a doctor one must be not only scientific but human also. What was largely wanted in the public schools and in ordinary life was some middle course between the German method of no play and the English one of all play. Games and amusements occupied too prominent a place in English life, and it seemed to him that there was nothing but the obligation and privilege of personal service for national defence, which would wean the English people, high and low, from their present condition of indiscipline, lazy indolence, and amusement and the vice of betting on every occasion, to the noble virtues of self-respect, unselfishness, and self-sacrifice. His autocar had been stopped a short time ago by a crowd round the doors of a building in a London suburb, and he was informed that the crowd consisted of the unemployed, who were waiting to enter a music hall. The same class could always find money to travel in its thousands, not to a rifle range but to a football match.

A cordial vote of thanks was proposed by Mr. Rushton Parker, who said the address was the best inaugural address he had ever listened to, and was seconded by Professor Sherrington. Mr. Ballance was afterwards entertained at dinner in the University Club by members of the Faculty of Medicine.

UNIVERSITY OF LEEDS.

The winter session of the Faculty of Medicine of the University of Leeds was opened on Friday the 1st of October, when the annual address was given by Mr. Justice Fletcher Moulton. Taking as his subject some considerations on health and disease, his lordship dealt at length and in a very fascinating manner with many of the abstruse problems in connexion with infection and with the question of immunity, natural and acquired. In the evening the annual dinner of the profession of Leeds and district was held in the library of the medical school. This was well attended. The toast of the chief guest, Mr. Justice Fletcher Moulton, was most happily proposed by Professor Hellier, who was in the chair. After referring to the debt of gratitude under which the school of medicine was to his lordship for the admirable address he had

delivered in the afternoon Dr. Hellier referred to his evidence on vivisection before the Royal Commission. "Very few medical men," said he, "ever practise vivisection—not one in a hundred. But we view with the greatest sympathy the work of those who do. They are the pioneers of our art, and we regard with jealous impatience any one who would hinder them. We know what they have done for us already. If I may take a single illustration, we should find it hard to express the feelings with which we regard the gift of antidiphtheritic serum. Diphtheria used to be a really dreadful disease to treat. You approached it with anxiety and uncertainty as to the course it might take and the sequelae which might follow, and with a sense of the impotence of the remedies at your disposal. Now we have a splendid remedy. The disease is shorn not of all its dangers, but of its worst terrors. This is a tremendous gain. We know that we owe this to the methods of experimental medicine. These methods and those who use them have been attacked, as it seems to us, unreasonably and fanatically. But we are not always good at fighting our own battles. I have an idea that some excellent practitioners are not at their best in the witness-box. I will not venture to take his lordship's opinion on that point. It was with pleasure, not unmixed at first with some surprise, that we found that a doughty champion had arisen to fight our cause—one who was not retained on our behalf to make the best he could of our cases, but one who had made a careful and independent study of the subject in the interests of truth and humanity. As we read the evidence given by Sir John Fletcher Moulton before the Vivisection Commission we were filled with admiration of that lucid and forceful deliverance. We felt that the opportunity of seeing him and giving some slight expression to the gratitude we feel is most welcome to us. I may express your feelings inadequately, gentlemen, but I think you yourselves will not leave Sir John Fletcher Moulton in doubt to-night of their depth and sincerity." The toast of "The Faculty of Medicine of the University of Leeds" was proposed by the Lord Mayor of Leeds (Alderman F. J. Kitson), and was responded to by Mr. B. G. A. Moynihan in the following terms: I beg to thank you for the enthusiasm with which you have acclaimed the toast of "The Faculty of the University of Leeds." The faculty, under its new name, would appear to be in the first flush of youth, but it is, in fact, as all of you are aware, an ancient and an honourable body. The members of the faculty of to-day are the descendants and successors of the men who have served the infirmary faithfully for a century and a half, and who were the founders of the old Leeds School of Medicine. It can certainly be said, with unimpeachable accuracy, that no other hospital in Britain produced during the nineteenth century (which began with Wm. Hey, the dresser to John Hunter, and the friend of Astley Cooper, and ended with Mayo Robson), an equal number, or so unchecked a series, of surgeons of the first rank, as the General Infirmary at Leeds. They were great even in their mistakes. I have often heard Mr. Jessop tell how, when he was house-surgeon, he would begin the day's work by making the *post-mortem* examinations. He would then visit the wards to arrange that two beds should be placed together so that three patients might lie in them, or help in the operation theatre. The inevitable result followed, and erysipelas and hospital gangrene were never absent for long. But Tom Nunnerley was equal to the occasion, and he produced what has been described as the "best book ever written" on erysipelas. There was greatness even in the errors of these men. They were, indeed, notable men in their own day. The record of our past is one we cannot contemplate without a thrill of pride. But what of the future? The achievements of the past are worth little if they are not an incentive to better work in the future. And we cannot forget that the circumstances of our work have altogether changed, and if we are to match the work of our forerunners our methods must change also. During the last thirty years or thereabouts both medicine and surgery have ceased to be merely observational sciences; the symptoms and the processes of any disease do not chiefly depend for their elucidation upon clinical investigation, however refined or accurate. The experimental method has established itself as essential, thanks largely to the work of Lister. If we are to measure a man's work by the magnitude of the service he renders to mankind, then Lister has a strong claim to be considered the greatest of men, for it is platitudinous to say that he has been the means of saving more lives than all the wars of all ages have thrown away. Our work in the future lies therefore not only at the bedside, in the theatre, or *post-mortem* room, but in the laboratory also. The reputation of a university faculty in the future will depend, I imagine, not on the energy with which, in the operations of an ancient, harsh, and cruel law, the forced feeding of its youth in unending lectures is conducted, nor upon the success with which its members deal with the more pressing therapeutic problems of the moment, but rather upon its output of original scientific work. It is permitted to us all to dream dreams. It is by no means idle or futile to give play to our fancy, for the greatest men of action are always the greatest dreamers. In my own dreams I have seen the departments of the faculty very different from what they now are in any British university. What are the conditions at present? In one university the chief duty of the Professor of Systematic Surgery is to deliver a course of 100 lectures. It is difficult, I should imagine, for even the most fascinating of lecturers to hold the attention of the student through such a course as this. The giving of the lectures seems to occupy almost the whole time a man can devote to the work of his chair. In my dreams I see something quite different. I see the Professor of Medicine or of Surgery, the head of a department of young, fresh, intellectually active men, engaged, each of them, in the giving of some small number of lectures, but chiefly occupied in research. The presence of the professor, first among equals, should be to them an intellectual provocation. The whole staff should be busy with the problems which most urgently call for solution, or for which they have special opportunities of inquiry. Research should be correlated with clinical work. The man engaged in it should be conversant with the methods and informed with the spirit of the foremost clinics of Europe and America. They should be travelled men. And when they are called upon to do, say, a thyroid enucleation, they would instinctively emulate the methods and perchance achieve something of the success of Kocher; when they resect a stomach they would bear in mind the marvellous dexterity of the Mayos; they would endeavour to do a hysterectomy as well as Faure; to remove a mammary carcinoma as well as Rodman; a brain tumour as well as Horsley; to do anything as well as a Murphy or a Hartmann. It is true that they would occasionally visit a clinic where the languor would seem to indicate that it is always Sunday afternoon. It takes all sorts to make a world, and we have all to learn not only what to adopt, but what to avoid. These, gentlemen, are the dreams in which I see our faculty maintaining, even perhaps enhancing, the great reputation it has enjoyed without interruption for so long a period. Happily, we can look with reverence upon the great men who have served the faculty in the past, and with wonder and admiration upon their accomplishments. I believe we can look with robust confidence and unfaltering hope to the future.

UNIVERSITY OF BIRMINGHAM.

Work for the winter session in the Medical Faculty commenced on October 4th; it was not inaugurated by any formal ceremony, but the date was nevertheless made notable among winter session commencements in the Birmingham Medical School owing to the many changes which it witnessed in the structural and other arrangements of the university. The departments of physics and chemistry have been removed to the new buildings at Bournbrook, where each has a separate block of its own. Part of the library has also been removed, though a large portion still remains in the old library in Mason's College. As the result of the removal of the physics and chemistry departments, there is in progress in the old buildings a considerable extension of the departments of botany, zoology, and physiology. Furthermore, at the commencement of this session there have been added nine new members to the professorial staff of the university; and another departure is to occur on October 20th, when honorary degrees will be conferred on a number

of distinguished persons. The social welfare of the undergraduates has been considerably increased, for the advantages of the University Club have been thrown open to all the men, and the women's hotel, which is close to the new buildings of the university, is now in full working order. On account of the changes which are being made in the various departments, there will be some little inconvenience at first before everything can be in proper order, but there is not likely to be more than a very short delay in the completion of the alterations, except, perhaps, in the department of chemistry. The work at the hospitals is in full swing, and the lectures and classes have all been arranged and are well attended. Post-graduate demonstrations are being given weekly at the General and the Queen's Hospitals.

UNIVERSITY OF BRISTOL.

The opening of the winter session at Bristol took place on September 30th, and must be regarded as a red letter day, since it was the beginning of the first winter session of the new university, and as such was marked by the delivery of an address by Sir Isambard Owen, the newly-appointed Vice-Chancellor. He was introduced to the large gathering of laymen and professional men of all orders by Mr. P. J. Worsley, the chairman, who was preceded to the platform in the large hall of the university by a procession consisting of the Senate and the officers of the various faculties, all wearing academic robes. Before calling on Sir Isambard Owen to deliver his address, Mr. Worsley described briefly the importance of the occasion in the history of the city, and mentioned the names of some of those whom the city had to thank for the achievement of its ambition. In his address Sir Isambard Owen, after congratulating Bristol on its attainment to the rank of a university, as well as a cathedral city, gave a history of the rise of universities in general. Universities, he indicated, only dated back to the twelfth century, the first to be created being the University of Paris. In the following centuries they came into existence all over Europe, and after a period of great success, good work, and noble ambitions, gradually degenerated, reaching their lowest pitch about one hundred years ago. Since then matters had greatly improved, and recent years had been marked by the great strength of the university movement. There had been a good deal of discussion as to the meaning of the term "university," but historical research had recently shown that in its mediaeval sense the word "universitas" meant merely a corporation, and was a phrase applicable and applied to guilds of all characters. In those days skilled workers of every class esteemed it their right to supervise and control all similar work done in their neighbourhood, and the bodies nowadays known as universities were originally guilds of teachers of various branches of higher knowledge who banded together and constituted a corporation, reserving the right of admitting others to the privilege of membership. The designation of membership varied between "doctor," "master," and "professor"; though each of these terms now had its specific meaning, they were originally interchangeable titles, all implying that the holder was capable of teaching his art. In early days a bachelor of a faculty was not a full member of the university, but a kind of pupil teacher. Nor was the object of a university primarily the object of learning, but the protection of teachers. As for the universities of to-day, it should not be supposed that the sole end and aim of their existence lay in granting degrees; the secret of university vitality lay less in the insistence on examinations than in fitting men for their future life-work; in Germany only a minority of students ever proceeded to degrees. The work of higher teaching could not in practice be separated from the work of research; the two must go together. Of course a great investigator was not always a good teacher; nor would it be true to say that no one could be a good teacher who had not made some important contribution to knowledge; but it was no exaggeration to say that it was only safe in a progressive subject to commit the highest teaching to men who had had sufficient interest in it to induce them to labour for its advancement. Nor, indeed, could a man be regarded as fully capable of teaching the methods of science unless he was actually engaged in the practical use of those methods. In mediaeval times the final controlling power of a university lay in the hands of its chancellor, who was an ecclesiastical authority it thus came about that class distinctions were non-existent, for the Church sought for the best brains and sought them in all classes. Mediaeval universities, in short, were essentially democratic institutions, and at the University of Bristol he hoped to see the sons and daughters of all classes of society sitting side by side; towards the achievement of this end the wise decision of the corporation to set aside part of its gifts to the funds of the university for the foundation of scholarships would greatly contribute. A vote of thanks to the orator was moved by Professor Jordan Lloyd, who in the course of his remarks expressed a hope that in the University of Bristol their motto would be "Equal opportunities for all."

WESTMINSTER HOSPITAL.

The medical school of Westminster Hospital was among the many which this year waived all ceremony in connexion with the opening of another winter session beyond the holding of a dinner of old and present students. This took place on Tuesday, October 5th, at the Imperial Restaurant, under the chairmanship of Dr. R. G. Hebb, at one time lecturer on forensic medicine, but now physician and physician pathologist to the hospital and lecturer on medicine and pathology to the school. He himself took charge of the toast of the evening, that to "The School and Hospital," and in the course of his remarks drew attention to the rapid losses by death which the school and hospital had experienced during the last year or two, and more especially to the latest blow of all, that caused by the death of Dr. Rivers Pollock, obstetric physician to the hospital, news of which had but just been received. The toast was acknowledged on behalf of the hospital by Sir George Bartley, who deplored the increasing difficulty in raising funds for the voluntary support of hospitals. If it continued it seemed almost inevitable that municipalization of hospitals should be brought into force. The substitution of rate-supported for voluntarily supported institutions would, he thought, be disastrous in its effects, and every effort should be made by the public to avoid it. Those who derived most benefit from the hospitals were those who gave them the least support, even relative to their means. Unfortunately, the present tendency was to encourage the working classes to expect all assistance to come from without. It was a mistaken policy, which should give way to encouragement of habits of providence and self-help. The reply on behalf of the school came from its dean, Mr. E. Rock Carling, who was able to report that the school was making good progress; this was the more satisfactory as in London medical schools as a whole universal depression reigned. The arrangements whereby teaching of the preliminary subjects was carried on at a common centre at King's College had worked very happily and would in consequence be adopted permanently. The other toasts included one to "Past and Present Students," proposed by Sir Robert Hudson and answered by Dr. Shepley Part, and a toast to "The Chairman," proposed by Mr. Charles Stonham, C.M.G., senior surgeon to the hospital and lecturer on surgery in the school.

ENTRANCE SCHOLARSHIPS AT THE MEDICAL SCHOOLS.

St. Bartholomew's Hospital.—The competitive examination for entrance scholarships, which commenced on September 23rd, resulted as follows: Of the two *Senior Scholarships in Science* (each of the value of £75) the first was awarded to Mr. A. G. Evans, of Trinity College, Cambridge, and the other divided between Mr. A. C. Roxburgh, of Trinity College, Cambridge, and Mr. G. Sparrow, of Caius College, Cambridge; for the *Junior Scholarship in Science* (value £50) Messrs. P. O. Ellison and D. H. D. Wooderson were declared equal; the *Scholarship in Arts* (value £100) went to Mr. C. Cook, Magdalen College School, Oxford, and the *Jeaffreson Exhibition in Arts* (value £50) to Mr. G. C. Linder, Brighton Grammar School.

CHARING CROSS HOSPITAL.—The competitions for entrance scholarships at this medical school have resulted in the following awards: The *Livingstone Scholarship*, value 75 guineas, Mr. F. J. Hallinan; the *Huxley Scholarship*, value 50 guineas, Mr. A. B. S. Jones; a *University Scholarship*, value 50 guineas, Mr. J. Milton Davies, and a *Universities Exhibition*, value £21, Mr. Abel Evans. A further entrance scholarship of 30 guineas has also been awarded to Mr. H. W. Williamson. The *Epsom College Scholar* is Mr. D. W. Pailthorpe.

ST. GEORGE'S HOSPITAL.—The *Entrance Scholarships in Anatomy and Physiology for University Students*, of the value of 70 guineas and £50 respectively, have been added together and divided equally between Mr. E. W. F. Grellier, of Downing College, Cambridge, and Mr. W. E. Waller, of University College, Oxford.

GUY'S HOSPITAL.—Of the two *Entrance Scholarships in Science* for junior students, one of the value of £150 has been awarded to Mr. C. H. Gould, the other, value £60, to Mr. J. Y. Moore. Both are members of the Preliminary Science Class at the school. The winner of the *Scholarship in Science for University Students* is Mr. T. B. Heaton, B.A., of Christ's College, Oxford. Its value is £60. Of the two *Entrance Scholarships in Arts* awarded the first, of £100, has been equally divided between Messrs. H. F. T. Hogben, of Bedford Grammar School, and W. M. Lansdale, of St. Olave's and St. Saviour's Grammar School, and the other, value £50, awarded to Mr. J. Kyle, of the University Tutorial College.

KING'S COLLEGE HOSPITAL.—The *Entrance Scholarship in Anatomy and Physiology* for university students has been awarded to Mr. P. L. Gibson, of Trinity College, Oxford; its value is £50.

LONDON HOSPITAL.—The following entrance scholarships have been awarded: The *Price Scholarship in Science*, value £120, Mr. J. Bostock; the two *Science Scholarships*, one of the value of £60, the other of £35, Messrs. A. G. Winter and R. J. M. Love respectively; the *Price Scholarship in Anatomy and Physiology*, for university students, value £60, Mr. J. R. Marrack, of St. John's College, Cambridge. The *Epsom College Scholar* is Mr. H. G. Winter.

ST. MARY'S HOSPITAL.—The entrance scholarships awarded this year are as follows: Two *University Scholarships*, each of the value of 50 guineas, to Mr. H. Thomas and Mr. T. H. Phillips, both of University College, Cardiff; Three *Open Scholarships in Natural Science*, one of £145 to Mr. R. W. Davies, King Edward's School, Birmingham, one of £50 to Mr. F. W. MacAlevey, Mount St. Mary's College, Chesterfield, and one of £25 to Mr. J. E. Cheesman, of the South Western Polytechnic. The *Epsom College Scholar* is Mr. D. R. Alexander.

MIDDLESEX HOSPITAL.—The competition for entrance scholarships resulted as follows: The *First Entrance Scholarship* of £100 was awarded to Mr. H. M. Wheeler, the *Second Entrance Scholarship* of £50 to Mr. T. C. Kidner, the *Third Entrance Scholarship* of £25 to Mr. A. O. Gray; for the *University Scholarship* of £50, Messrs. P. L. Hardy and H. J. Shields, both of Cambridge, were declared equal. To the newly created *New Zealand Scholarship* was appointed Mr. C. E. Procter, on the nomination of the University of Otago, and to the *Epsom (Lucas Freer) Scholarship*, Mr. C. E. Procter.

ST. THOMAS'S HOSPITAL.—The entrance scholarships awarded this year are as follows: The *Entrance Scholarship in Anatomy and Physiology* for university students (value £50), Mr. W. M. Oakden, of Cambridge University; the two *Entrance Scholarships in Science* (combined value £210), Messrs. A. R. C. Doorly and N. P. Lamb; the two *Scholarships in Art*, Messrs. D. C. Thomas and P. G. S. Davis; the *City of London Scholarship*, Mr. G. R. Bird; the *Merchant Taylors Scholarship*, Mr. T. G. Gimlette. The Epsom scholar of the year is Mr. O. D. Brownfield.

UNIVERSITY COLLEGE HOSPITAL.—Of the two *Entrance Scholarships in Anatomy and Physiology*, each of the value of 80 guineas, one has been awarded to Mr. G. C. Chubb, D.Sc., and the other to Mr. Julian Taylor. They are both old students of University College, London.

WESTMINSTER HOSPITAL.—Of the two *Scholarships in Arts*, the first, value £60, has been awarded to Mr. M. C. Breese, and the second, value £40, to Mr. A. M. Hughes. The corresponding *Scholarship in Natural Sciences* has gone to Mr. H. J. Hoyte; and the *Scholarship in Anatomy and Physiology*, value £70, for university students, to Mr. S. B. White. The Epsom scholar is Mr. J. S. Ranson.

LITERARY NOTES.

BY a decree dated September 15th the Italian Minister of the Interior approved the official *Pharmacopoeia* of Italy, which is to take the place of that which received the approval of the Government on March 1st, 1902.

The first number of the *Local Government Review* will appear on November 1st. It is described in the prospectus as "a new monthly review devoted to the impartial, authoritative, and adequate treatment of all local government questions." Among these are mentioned public health, education, housing, the relief of distress, the care of the sick, the aged, and the insane, unemployment, rural depopulation, allotments, and small holdings, municipal finance, highway administration, and the protection of public rights. The circle of men and women (it is said) who take a keen and intelligent interest in local government questions is rapidly growing wider. They look for something better than scrappy, attenuated paragraphs; something more than mere items of local news, yet at the same time something less than the dry-as-dust technical contributions which appear in professional and class publications. Precisely the same want is felt by members and officials of local authorities. What is required, in short, is a medium in which local government questions shall be dealt with on the broad lines followed by the existing great reviews in their treatment of political, national, and imperial questions—a medium which shall be a worthy exponent and representative of local self-government in all its aspects and bearings. The *Local Government Review* is intended to meet these needs. In the first list of contributors we note the name of Dr. H. R. Kenwood, medical officer of health, Borough of Stoke Newington; Dr. G. F. McCleary, medical officer of health, Borough of Hampstead; Dr. David Nabarro, Sir Thomas Oliver, Mr. J. E. Purvis, M.A., Dr. George Reid, medical officer of health, Staffordshire County Council; and Dr. H. Meredith Richards, medical officer of health, Croydon.

The Editor of the *Medical Officer* will publish early in the New Year a directory of the whole public health service in England, Scotland, and Wales. The directory will include full particulars of the whole staff of sanitary authorities and school inspection officials. If any medical officer has not received a form for filling up, he is requested to communicate with the Editor at 36, Whitefriars Street, E.C.

In the Section of Anthropology of the British Association Mr. John Maclean read a paper on the Blackfoot Medical Priesthood. He defined the priests as *shamans* [let any frivolous person who may see an opportunity in this word remember Johnson's dictum that he that would make a pun would pick a pocket!], conjurors, doctors, prophets, and priests, assigning each of these classes different grades in the priesthood. Before initiation the candidate has to undergo a period of voluntary seclusion, during which he fasts and sees visions. Speaking of diseases, Mr. Maclean said the Blackfeet were especially liable to small-pox and consumption. In discussing the causation of diseases, special stress was laid on the influence which the belief in evil spirits had upon the minds and bodies of the natives. Mr. Maclean then treated of the medicine man in connexion with religion, such subjects as animism, sacred stones, sacrifice, spiritualism, hypnotism, prophecy, and incantation being discussed, as well as medicine songs, charms, and amulets. Lastly, he considered native medicines and remedies, and discussed the value of the work of the medicine men among the natives, and the influence exercised by them on the native religion.

The doctor figures largely in the fiction of the day, either in a sensational way as a scientific "superman," or as a mixture, in varying proportions, of quack and fool. Even medical writers of fiction make mistakes which show that the knowledge of their original profession with which they may have started in life has left but a faint impression on their memory. Yet, as we have more than once said, doctors alike from their experience and their training, should know more of human nature in its naked-

ness than men of any other class. What reminiscences might not be written by men who have seen so much and at such close quarters! Of course the secrecy to which every practitioner is bound stands in the way of such records. But one cannot help regretting that an amount of material which would furnish plots for innumerable plays or stories taken direct from life lies locked up, like the learning unvivified by sack which Falstaff calls a mere hoard of gold kept by a devil—and all because there is not the genius to set in act and use. Villemessant used to say that every man had in him an article which could be got out of him by an editor who knew his trade. It may with greater truth be said that every doctor has in him at least one story worth telling, could any one be found to play the midwife to his brain. The Editor of the *Strand Magazine* evidently knows this, and wishes to encourage doctors to deliver themselves of any story they may have stored in their memory or lying as an undeveloped germ in the place where fancy is bred. As may be seen in our advertising columns, the proprietors of the *Strand Magazine* offer £50 for the best "medical story," which may be either fact or fiction. It must not exceed 6,000 words in length, and must be written by a qualified medical man. We may remark that the word "man" seems to us rather unfair to our sisters of the household, unless it be taken in the strictly *proper* grammatical sense in which "man" is considered to embrace woman. Stories must be sent before December 1st, 1909, to the Editor of the *Strand Magazine*, 8–11, Southampton Street, Strand.

MOTOR CARS FOR MEDICAL MEN.

Insurance.

Many medical owners have experienced a difficulty in arranging a satisfactory policy of insurance on their motor cars. The Medical Insurance Committee, established with the approval of the *Lancet* and British Medical Association in March, 1907, has for some time had this matter under consideration, and, as announced elsewhere in this issue, is now able to recommend insurance at Lloyd's. A good many different policies, all more or less of the same type, and all based on the principle that the amount of compensation shall be the replacement value, are available, including special policies for all the chief makes of car which entitle the holder to begin repairs at once with any of the repairers recognized by the makers; but, on the whole, the special "doctors' policy" seems best adapted to meet the requirements of medical men. Full details can be obtained on application to the Secretary and Agent of the Medical Insurance Committee, 429, Strand, London, W.C.

International Exhibition.

An international exhibition of motor cars will be held at Olympia, London, from November 12th to November 20th. There will be no other international exhibition in Europe this year, and among the 300 firms which will take part in the exhibition at Olympia are the principal manufacturers of Great Britain, France, Germany, Belgium, Italy, and America. The exhibition is organized by the Society of Motor Manufacturers and Traders with the co-operation of the Royal Automobile Club.

Self-Cleaning Plug.

A self-cleaning plug, invented by M. Pognon some years ago, has now been placed on the English market under the name of the Hobson-Pognon plug by H. M. Hobson, Limited, 29, Vauxhall Bridge Road, London, S.W. We are informed that the insulation is maintained under all conditions of varying temperature and compression, and that the plug has been found still usable after service in a car which had run 35,000 miles.

New Models.

The De Dion Bouton (1907), Limited, is about to issue a catalogue for 1910, containing a list of a variety of new models, the power varying from 8 to 35-h.p. nominal and the number of cylinders from 1 to 8. The principal departures from De Dion practice are the fitting of ball bearings to the road wheels in two of the smaller models only, a live type of back axle, and the standardizing of a V type 8-cylinder motor.

Excise Duties.

L. P.—The excise duties on motor cars to be imposed by the Finance Bill will take effect from January, 1910, only. The duty on motor spirit, on the other hand, took effect from April 30th, 1909. The duty on a 6-horse power car will be £2 2s., but under the provisions of the bill as amended in committee, a rebate of one-half will be allowed on proof to the Commissioners or Council granting the licence that the car is kept for professional purposes.

The Cambridge Scientific Instrument Company has issued a list (No. 57) of microtomes, embedding baths, and other appliances used by histologists.

Medical News.

At a meeting of University College Medical Society on Wednesday next, Mr. Arbuthnot Lane, F.R.C.S., will give an address on civilization. The chair will be taken by Mr. Arthur E. Barker, F.R.C.S., at 8.30 p.m.

The winter session of the West London Medico-Chirurgical Society was opened on October 8th by the delivery of the presidential address by Dr. Neville Wood, who dealt with the selection of patients for spa treatment.

The Royal Institute of Public Health has arranged a course of lectures for candidates desirous of qualifying for the position of health visitors, school nurses, etc. The lectures will begin on October 19th. Further particulars can be obtained on application to the Honorary Secretary, 37, Russell Square, London, W.C.

The Gresham Professor of Physic, Dr. F. M. Sandwith, will give four lectures on some medical aspects of the Poor Law Commission on Tuesday, Wednesday, Thursday, and Friday, October 26th to 29th. The lectures will be given in the City of London School, Victoria Embankment, near Blackfriars Station, at 6 p.m. on each day.

The autumn dinner of the Glasgow University Club, London, will be held at the Gaiety Restaurant on Friday, November 5th, at 7.30 p.m., when the Right Hon. Lord Rosebery, Chancellor of the University, will preside. Members intending to be present or to introduce guests are requested to send notice at once to the Honorary Secretaries, 4, Bryanston Street, Portman Square, W.

The Princess of Wales visited the National Hospital for the Paralysed and Epileptic, Queen Square, on October 9th, to receive jubilee purses. They contained in no case less than £10, and the total accruing to the funds of the hospital was over £8,000. The actual date of the jubilee of the hospital is November 2nd, on which day further purses will be received at the hospital by the Duchess of Albany; two days later certain new buildings are to be declared open by His Majesty the King. The total sum required for various much-needed alterations and improvements and to strengthen the financial position of the institution is £50,000.

In addition to the ordinary free winter course of clinical lectures and demonstrations given at the National Hospital for the Paralysed and Epileptic, which began on Tuesday last, two special courses will be given during the winter session. Dr. Gordon Holmes began a course of eight lectures and demonstrations on the clinical anatomy of the nervous system on Thursday last; the fee for this course is two guineas. Sir Victor Horsley will begin a course of four lectures on the surgical diagnosis and treatment of diseases of the nervous system on Monday, November 15th; the fee for this course is one guinea. Further particulars can be obtained on application to the Dean of the Medical School at the Hospital, Queen Square, Bloomsbury, W.C.

Mrs. Allinson, formerly dean of a well-known women's college in the United States, contributes to a recent number of the American *Nation* an article on "The Present and Future of Collegiate Education." From an abstract which appears in the July number of the *Brown Alumni Monthly* (a magazine representing the Brown University, Providence, Rhode Island) Mrs. Allinson notes a tendency to reopen the question of co-education, which ten years ago was in many parts of the States regarded as settled in the affirmative. She calls attention to co-education as the most economical method of educating the two sexes, and remarks that whether or not the boys are gainers by it, the girls certainly are. But she adds that under co-education student life is less rich for the girls than in separate colleges, and to some extent for the boys. The association of the two sexes, on the part of average students, tends to triviality, and to a certain hardening of the manners. It now appears, says Mrs. Allinson, that in co-educational colleges a repulsion between the sexes is springing up. Each sex avoids these colleges, or, in the same college, the classes preferred by the other. The State universities, which ten years ago treated the sexes exactly alike, now have more or less of segregation. Under these conditions the affiliated colleges would seem to have the advantage. But most of them have disabilities arising from financial limitations, and they suffer the disfavour of the champions of each extreme. Mrs. Allinson expresses the hope that some rich State university will take the lead in establishing separate undergraduate departments for men and women.

British Medical Journal.

SATURDAY, OCTOBER 16TH, 1909.

"SECRET REMEDIES."

THE volume, *Secret Remedies*, published by the British Medical Association at the end of July, has already commanded so large a sale that it is evident that it has appealed to a large section of the intelligent public. The first two impressions were absorbed in less than a month, and since then no less than three further impressions have been called for, the vast majority being sold through ordinary trade channels. The book has had a ready sale on railway bookstalls, and the demand shows signs of steadily growing. This large sale must be attributed to the intrinsic interest of the subject, for the book has not been at all largely advertised. Advertisements have appeared in the *Daily Telegraph*, *Manchester Guardian*, *Glasgow Herald*, *Spectator*, *Punch*, *John Bull*, *Pharmaceutical Journal*, and *Chemist and Druggist*. An advertisement tendered to the *Daily Mail* was at first declined, but afterwards accepted. The *Daily Express*, *Daily Chronicle*, *Star*, *Graphic*, and *News of the World* refused to insert the advertisement, and the veto in the case of these newspapers has been maintained. This fact casts a light at once curious and instructive on the attitude of part of the British newspaper press towards the quack medicine trade. It is, of course, common knowledge that the nostrum mongers advertise very largely, and the revenue derived by many newspapers from this source must be very considerable, but probably few members of the public realize that some newspapers reap so large a harvest from the nostrum advertisers that they are unwilling to accept a modest little advertisement of a book which explains what these much-vaunted remedies contain, and how much they cost to make. It is true that the contrast between these claims and these ingredients is striking; the former are as exuberant as the latter are commonplace. The romance of the advertisement, indeed, finds no support in the prose of the analyst. But all these our contemporaries profess a mission to educate the public, and might therefore have been expected to review the book at length, so that their readers might be enlightened as to the composition of the remedies which are said to cure consumption, and kidney disease, and gout, and epilepsy, and diabetes, and even cancer. Instead of so doing they take the extreme course of refusing an advertisement of the work. Wise in their own generation, they assign no reason for the refusal, and the suggestion that it is the fear of offending the quack drug sellers is permissible. It is not an incident of which the British press can feel proud, but it is one of which the medical profession must take note.

The amount spent annually by the public on secret remedies must be very considerable. A chemist in a northern town of some 12,000 inhabitants has spontaneously informed us that in his business, which he describes as modest, the "patent sales" verge on £600 a year. Judging by the receipts recorded in the annual returns of the Inland Revenue Department from stamps on "patent medicines" during the last ten years, the bulk of the trade is steadily increasing. The revenue from this source rose from £266,000 in 1899 to £334,000 in 1908. An attempt has been made in *Secret Remedies* to estimate the amount the public paid during 1908 for nostrums bearing the Inland Revenue stamp. The data are insufficient for a positive conclusion, but it seems probable that it was not far short of three millions, perhaps even rather more. It is safe to estimate that of this amount one-tenth or less was the profit of the retailer and that not less than nine-tenths went into the pockets of the nostrum makers themselves. If we allow another tenth for the cost of the ingredients of the remedies and the bottles or boxes in which they are packed, a rather liberal allowance, we have left a sum of about two millions and a half to provide the profit of the maker, and the cost of advertisement.

There is abundant evidence that the trade inflicts cruel hardship on the classes least well able to afford to waste money. Probably every medical man could give instances within his own knowledge of poor mothers pinching themselves to buy some expensive nostrum which its vendor asserts will restore her child or her husband or herself to health. A correspondent recently told us of a case in which a deserving widow, struggling for a livelihood, spent £5 on a nostrum proved on analysis to consist of a solutionof citric acid in coloured water. But many worse cases could be quoted. In this connexion it is worth while to note that of the 41 million bottles or packages stamped by the Inland Revenue in 1908, no fewer than 33 million were priced at a shilling or less.

Advertisement bold, and free, and mendacious is the motive power in the nostrum business, and the refusal of certain newspapers even to insert an advertisement of a book telling the public the truth about the best known of them, is disquieting evidence of the kind of reception which any proposals for legislation to control a trade, which is really nothing short of fraudulent, is likely to meet from a large section of the press. Possibly, if the Select Committee half promised by the Home Secretary is appointed next year, the evidence it will hear may bring about a change of attitude.

FULGURATION AND ELECTRIC SPARKING.

ELECTRIC sparking as a means of treatment of disease was first employed in 1890 by d'Arsonval, who found that currents alternating 100,000 or even a million times a second could be employed with safety provided that the voltage was high. The effect of sparking on the skin may be described as that of local burning, with the formation of a scab, and vacuolization of the intima of the arteries. Studies on the physiological effects of sparking on the organs and tissues in animals have demonstrated that defective skin is rapidly dried, and equally rapidly epidermized. The heart responds by arrhythmia and increase in the blood pressure, while the brain tolerates the sparking without appreciable changes. Bacteria are attacked and destroyed.

In discussing the value of this form of treatment, Dr. F. Davidsohn [1] finds that the curative factors are (1) mechanical action, (2) thermic action, (3) bactericidal action, and (4) electric effect on the cell and on the metabolism of the cell. Analysing these factors, he comes to the conclusion that arsonvalism has scarcely more than a suggestive effect on disease processes. He believes that it is otherwise with fulguration. Apart from the treatment of cancer,

[1] *Berl. klin. Woch.*, July 12th, 1909.

fulguration is said to cure lupus (Strebel and Görl), warts (Linn), angiomata (Bergonié and Kabane), haemorrhoids (Doumer), alopecia areata (Brieger, Morton), psoriasis (Oudin), acne, acne rosacea, eczema, and itching (Laquer, Nagelschmidt), and ozaena (Bordier and Collet). The author himself only speaks of his own personal experience with regard to lupus, and even in regard to that disease he expresses himself somewhat ambiguously.

In connexion with cancer, the method of Keating-Hart is naturally dealt with. This method is described is glowing terms by Desplats, who treated 100 cases, among which 11 were severe ones, which had been regarded previously as inoperable. Five of these cases were "cured" in from twelve to sixteen months. Duret also met with 12 "cures" out of 52 inoperable cases, and "several of these remained free "from recurrence for nine months." Juge spoke of 11 "cures," while Pozzi and Laquerrière are reported as having observed several "cures." The point at issue turns on what is understood by the term "cure."

Keating-Hart expresses himself more guardedly. He says: "Je ne prétends pas avoir trouvé la "guérison définitive du cancer, mais mes résultats "semblent me donner le droit de réclamer que ma "méthode soit expérimentée largement." He claims to have obtained "cures," probably meaning temporary relief from symptoms, which just possibly may prove permanent, in 95 per cent. of cutaneous cancers, in 40 per cent. of glandular cancers, and in 20 per cent. of mucous cancers.

The majority of the German surgeons who have employed this method of treatment have failed to obtain equally good results. According to Dr. Davidsohn, this is due to faulty technique, false improvements in the apparatus, and wrong application. Of his own experience he states that he has treated five cases by fulguration without operation. This means that he was not able or not willing to follow out Keating-Hart's directions. What has become of these patients he does not state, save that in one case after fulguration without general or local anaesthesia, the tumour—a recurrent cancer of the breast—dried up, the pains ceased, and soon the tumour proper—that is, the portion which protruded beyond the level of the surrounding skin—disappeared. In three weeks a scar covered the site of the tumour, and after four weeks the patient was "apparently cured." He points out that even if this "apparent cure" does not last, the fulguration can be repeated without fear of local damage, which certainly is not the case with Roentgen rays. This may be so, but in the absence of further details, especially as to what is taking place in the deeper parts, we do not consider that the use of the word "cure" is justifiable, even in the qualified sense in which it is employed. We are still waiting for a single case in which the cure has been definite, and has persisted for a period of, say, three years. It is well known that many local manipulations are capable of temporarily arresting the progress of a malignant growth, but, sooner or later, the growth has always resumed its course, and the patient has died, save when the surgeon's knife has succeeded in removing the last trace of the disease. We do not speak of cutaneous growths of small size; many of these disappear almost spontaneously. But the cases for which another method of curing than the knife is sought are those in regard to which clinical experience has taught that the patient is doomed to death, which, in the present state of knowledge, is inevitable, though it may be more or less delayed.

FASTING PRISONERS AND COMPULSORY FEEDING.

Elsewhere we publish several letters on this subject. We have received a number of others for which we regret to be unable to find room. We need only state in general terms that all of them—with one exception, which deals almost entirely with the political side of the question—are in substantial agreement with the view that has been expressed in the Journal. We give a few extracts from these letters:

"M.D., F.R.C.S." says: "The letters which have "recently appeared, signed by some members of our "profession, on the subject of compulsory feeding of "recalcitrant prisoners, do not betoken a vast amount "of good sense on the part of the writers. To assert "that the passage of a soft rubber tube may 'tear the "'oesophagus' or cause 'pigmentary colitis' [we may "here remark that one paper, by a happy misprint, "exactly expressed the value of this opinion by "changing the adjective to *figmentary*] or in "some other way endanger life is arrant non-"sense. . . . If prisoners are kept in prison, it "is clearly the duty of the authorities to prevent "them committing other felonies, and it must not "be forgotten that suicide is a felony. The outcry "that would be raised against a prison medical officer "who allowed a prisoner to starve himself to death "can be imagined, and the outcry in that case would "be justifiable." Dr. C. V. H. Nesbit of Randalstown writes: "If an otherwise healthy individual refuses "food to the injury of her health and danger to her "life, she is without doubt to my mind tempo-"rarily insane, just as much as a person taking "a dose of poison in similar circumstances. Let "the idea be what it may—political or otherwise—"the mind is unhinged, and the individual must "be guarded against herself." Dr. Nesbit says he has never heard of any accident from the use of the soft rubber tube; he has had no difficulty himself when he has been called upon to practise this method of feeding, "even the relations being only too "willing to assist in holding the patient." He concludes: "This hunger-strike is without doubt a very "cheap way of escaping the penalty of the law—"not to say of advertising. But we would not "tolerate such a state of affairs in Ireland!" Dr. F. W. Collingwood says he feels that the only function of a medical officer as such is to prevent loss of life; and even were it proved that the use of the long tube was attended with some slight degree of danger in some cases, it should undoubtedly be used to prevent the greater evil of certain loss of life by starvation. Another correspondent writes: "A woman in gaol for forging or "stealing or for infanticide might possibly refuse food "for the express purpose of impaling her gaolers on "the horns of a dilemma, but the prison doctor would "of course stop her little game by forcibly feeding "her. A man under sentence of death might "conceivably adopt similar tactics; but again the "doctor would intervene, and so prevent him "disappointing the hangman. When we come, how-"ever, to persons 'fighting for a political idea,' the "case is entirely changed. A suffragette is put in "gaol for cutting open a policeman's head. She very "properly refuses food when she is not allowed to "choose her suite of apartments, and justifies herself "in these words: 'You silly, silly prison warder, it "'was not a drunken woman who hit the policeman; "'it was myself, a suffragette. It was a political idea.

"'Give me better rooms at once, or I shall starve "'myself to death, and you, sir, will have killed me.' "The mule of a warder will not move a step, so what "can the lady do but fast? The doctor is called in— "a vulgar brute of a fellow—and he forces food "down her throat, whereat the lady becomes irate "indeed, to say nothing of being disappointed." This is, as Artemus Ward would have said, "rote "sarcustical." Another correspondent, who does not speak from the medical standpoint, but has himself been in prison, writes: "If hunger-strikes amongst "prisoners were allowed to continue, or if these "ladies were classified as first-class misdemeanants, "one of two things would speedily happen. In "the first event, all our gaols would be emptied of "the whole of their present occupants, and in the "latter event it would find work for all the unem- "ployed in this country erecting more prisons. The "contention that the suffragettes are political pri- "soners is nonsense! Their motive may be to get "certain laws passed, but they grossly offend against "the common law, and no discrimination would be "tolerated, or else where could the distinguishing line "be drawn? Prior to the Act of 1898 antivaccinators "were treated as ordinary criminals, and I do not "remember any general protest, and yet they had not "resorted to stone-throwing or assaults upon officers "who were simply carrying out their duty. The "inference of cruelty in the administration of food I "take to be an unwarrantable aspersion upon the "medical officer and his staff at Winson Green Gaol "but the fact cannot be overlooked that the prisoners "have brought on themselves whatever happens."

As for ourselves, we have nothing to add to what we have already said on the general subject, nor have we anything to retract. The only point that seems to call for comment is that raised by Dr. McNaughton as to the responsibility of the Home Secretary. With all deference, we submit that the medical officer of one of His Majesty's prisons is not the supreme and final authority in the sphere of treatment that he is represented to be by Dr. McNaughton. We happen to know that in at least one instance objections were raised by the Home Office to the proposed administration of food in the way that has now been used in the case of some women imprisoned for "political" offences, and they were liberated the next day. If the Home Secretary's sanction is required for this method of dealing with "hunger-strikers," clearly the responsibility rests on him. In the case of the suffragists sentenced to imprisonment at Birmingham, we have a statement made by one of them, Mrs. Mary Leigh, to her solicitor and published in several papers. We quote from the *Standard* of October 12th. She was taken to Winson Green Gaol on a Wednesday afternoon. She proceeds: "About "noon on Saturday I was told the matron wished to "speak to me, and was taken to the doctor's room, "where I saw the matron, eight wardresses, and "two doctors. There was a sheet on the floor and "an armchair on it. The doctor said I was to sit "down, and I did. He then said: 'You must listen "'carefully to what I have to say. I have orders "'from my superior officers' (he had a blue official "paper in his hand, to which he referred) 'that you "'are not to be released, even on medical grounds. "'If you still refrain from food, I must take "'other measures to compel you to take it.' I then "said: 'I refuse; and if you force food on me, I "'want to know how you are going to do it.' He said: "'That is a matter for me to decide.' I said he must "prove I was insane, and the Lunacy Commissioners "would have to be summoned to prove I was insane, "and he could not perform an operation without the "patient's consent. The feeding by the mouth "I described as an operation and the feeding by the "tube as an outrage. I also said: 'I shall hold you "'responsible, and shall take any measure in order to "'see whether you are justified in doing so.' He "merely bowed and said: 'These are my orders.'" From this it appears that the prison medical officer expressly informed the prisoner that he was acting under orders. This is confirmed by the affidavit of Miss Laura Ainsworth, which is published at page 1197. Dr. McNaughton confuses two distinct things: The administrative responsibility of the Home Office and the professional action of the medical officer. The doctor is ordered to prevent a prisoner from starving herself, but with him rests the choice of the method of carrying the order into effect. In this he must use his own judgement. It is, perhaps, needless to add that as excision of the tongue is not a recognized mode of dealing with "volubility" in this country, the Home Secretary has no power to order such a procedure. The whole question must, however, now be threshed out, as the High Court of Justice has granted a rule *nisi* for a *mandamus* to the stipendiary magistrate of Birmingham to issue summonses against the medical officer and the governor of the Winson Green Prison for assault on behalf of Miss Laura Ainsworth. A report of the proceedings will be found elsewhere.

INSURANCE, MOTOR AND OTHER.

AT a meeting of the Medical Insurance Committee at the offices of the British Medical Association, 429, Strand, a resolution of condolence with Mrs. Radcliffe Crocker was adopted, expressing the Committee's sense of the loss it had sustained by the death of her husband, who had acted as Chairman of the Committee since its formation, and had by his keen interest and business aptitude very greatly contributed to enabling it to work up so large a business. Dr. G. E. Haslip was elected chairman in the place of Dr. Radcliffe Crocker, and Dr. D. J. Mackintosh, M.V.O., Medical Superintendent of the Western Infirmary, Glasgow, and Dr. Hugh Ker, one of the Representatives of the Metropolitan Counties Branch on the Central Council of the British Medical Association, were invited to join the Committee in the room of Mr. George Eastes, deceased, and Dr. Chaplin, resigned. It was resolved that at the next meeting the question of enlarging the Committee should be considered, and the editor of the *Lancet* undertook to suggest an additional member to represent that paper. The Agent and Secretary was able to report that there had been a considerable increase in the volume of business and in the premium income during the year, and that this was particularly marked in the life and personal accidents departments—a result which was regarded as particularly satisfactory, since it seemed to indicate that the efforts of the Committee to bring home to those engaged in the practice of medicine the wisdom and prudence of insuring against personal accident were beginning to have effect. The Committee has had under consideration for some time the question of motor-car insurance, and is now in a position to recommend insurance at Lloyd's under a policy which is better calculated to meet the practical needs of motor-car owners than any other which has been inspected. It

is well known that the sale value of a car purchased new deteriorates very rapidly. A medical man may, for instance, purchase a new car for £700 and insure it for that amount, paying a premium on that sum annually; if, however, his car become a total loss three or four years later, he would, in ordinary circumstances receive not the replacement value, £700, but the sum at which the car is valued at the time it came to grief. A car bought new for £700 would probably in its third year not be valued at one-half that amount although its usefulness to the owner would not have greatly diminished. The policy which the Medical Insurance Committee recommends meets this objection, since the payments paid are upon the present full value of the car and accessories, and the insurer can alter the valuation at the expiration of the year to meet the decreased market value of his car. The premium rates are governed by the present value of the car and accessories and by its horse-power; for instance, on a 10-h.p. car and accessories valued at £300 the annual premium is £11 10s., and for a 14-h.p. valued at £400 the premium is £14, and so on. The rates quoted are those of the "Red-Cross" doctors' policy, and the premiums cover (1) all damage to car the direct result of accidental collision, excluding wilful damage, wear and tear, and mechanical breakdown; (2) all claims for which the assured may be liable for injury to persons excluding passengers and animals, or damage to vehicles or property caused by the car; law costs being incurred by consent; (3) all damage by fire, lightning, explosion, or self-ignition; (4) loss of car by theft, including accessories, fittings, or parts, if stolen with the car, and damage to car through any attempt at theft; (5) damage to car while being towed or conveyed by road, rail, or inland waterway, anywhere in the United Kingdom; (6) damage to lamps and accessories due to accidental collision, and damage to tyres from the same cause when the car also is damaged. Further, the compensation of £1 a day is paid during the time the car is being repaired owing to an accident, to cover the cost of hiring a conveyance; this compensation is payable from the second day after the receipt, from the repairers of the assured, of an estimate for the repairs, until the repairs are actually completed. The amount in any case may not exceed 75 per cent. of the agreed cost of repairs. There is no restriction as to driver, all damage to the car being covered while any licensed person is driving, whether with or without the knowledge of the assured. Under this policy the insured value is agreed as the replacement value; thus, in the event of total destruction or loss the full amount insured is paid in cash. If no claim is made in a year an amount equal to 25 per cent. of the full premium paid will be returned in cash. If the owner only drives there is a reduction of 5 per cent., and if the same owner owns two cars, only one of which is used at a time, there is a reduction of 20 per cent.; if both cars are liable to be in use at one time the reduction is 10 per cent. The owner's liability with regard to his paid driver, accidents to the owner or passengers in the car, and theft of accessories can also be provided against under these policies. The Medical Insurance Committee is able to allow 10 per cent. off the total premium paid by the insurer. Special policies are also issued to owners of certain makes of cars, authorizing them to have repairs up to any amount commenced immediately without consent at the authorized agents of the particular company, but for a medical man the "doctors' policy" would seem to be the best. Red-Cross policies are also issued without the provision above mentioned for compensation while the car is being repaired, and can be made to cover mechanical breakdowns under certain conditions, the premiums being adjusted accordingly. A full prospectus of all these policies may be had on application to the Secretary and Agent of the Medical Insurance Committee, at 429, Strand, London, W.C.

HOW MANY PATIENTS SHOULD BE SEEN IN A DAY?

A CONTRIBUTOR to the August issue of the *Stethoscope*, a journal published by the University College Union, writing over the initials "C. E. S. F.," raises a question which is not the less interesting because probably it cannot be solved: How many patients should a doctor see in a day? The only possible answer is that it all depends upon circumstances. In the case of surgery, success depends so greatly upon adequate preparation of mind, body, and appliances, that most surgeons realize that they can only see a certain number of patients on any given day. Similar limitations are commonly, though less habitually, placed on themselves by physicians in active practice. In an out-patient department a physician has so much assistance that he can quite well deal with a very large number of cases at one sitting; but it is otherwise in his own consulting room. There he has no assistance, and though he can send urine and other secretions to a clinical laboratory for report, he must himself conduct all the examinations—ophthalmoscopic, laryngoscopic, gastroscopic, and the like—which in the light of modern science may be deemed necessary to the proper appreciation of any given case. In this way, dealing with a single patient may well occupy as much time as an ordinary operation. The public little realizes this fact, and, once a physician becomes popular, the extent to which he is tempted to step outside proper limits daily increases. That it is a temptation in the true or scriptural sense of the term there is no doubt, for, while managing to see a very great number of patients in a day may be part of the art and science of practice, it is not practising the art and science of medicine. Apparently, "C. E. S. F." yearns for a time when every medical man, whatever his particular line of work, will be able to take as much time over his cases as he pleases and still expect to gain a living. Every professional man, whether he be surgeon, physician, barrister, engineer, or journalist, probably experiences the same desire, and, though it is never likely to be gratified in full, something in the same direction would have been achieved if the public could be induced to give effect to the principle that good work should receive good pay. In reference to medicine, it is only by a slow process of education that this view can be made to prevail, and it is for this reason, perhaps, that "C. E. S. F." ends his article with a reference to the British Medical Association. After pointing out the futility of mere grumbling and the value of union, he says that a society only needing for its complete efficiency the support of all medical men is already organized for their mutual help and defence, and ready at their doors—the British Medical Association. Many who are not members say, What will it do for me? It will do, says "C. E. S. F.," more than has yet been asked of it, if only it has the chance. We commend his words to the attention both of those who are within the fold and those who still prefer to remain outside: "The Association is medical men, but "if medical men will not be the Association, what "help can they expect in their struggle? It "wants every one to join: the scientist who 'has not "'time or inclination to bother with these things,' for "he will leaven the Philistine with his spirit. He "will find that he is an integral part of a great society "of would-be scientists, and this society will help to "get for him a better approciation of his scientific

"work, and so better opportunities to practise as a "scientist. It wants the man who has succeeded, "because he knows something of the way to success. "It wants the man who is struggling, because he "knows something of the obstacles that lie in the way "to success. It wants you, and if you want to practise "as an artist and a scientist, or only as a money-maker, "you want the Association."

ULTIMATE RESULTS OF SURGICAL TREATMENT FOR GASTRIC ULCER.

THE technical perfection and the immediate success of surgical operations on the stomach as now performed by a large number of surgeons are no longer open to question. It is possible, however, for the sceptic to express doubts whether the patient who leaves the care of the surgeon with a neatly-healed abdominal incision is permanently benefited by what has been done, especially when it is remembered that cases of gastric ulcer undoubtedly derive marked benefit from rest in bed and careful diet under simple medical treatment, that they are discharged apparently cured, and that they remain free from symptoms for varying periods of time. It is therefore desirable to obtain reports on the condition of patients who have been operated on after some years have elapsed; and although there is considerable difficulty in obtaining this information respecting hospital patients, it can be surmounted by care and diligence. Such a report was published on Professor Terrier's cases three years ago,[1] and now Dr. Max Busch gives the results of cases operated on by Professor Koerte.[2] He has divided these into two series: the first, previous to 1900, comprised 38 operations, and the second, to the end of 1908, 124 patients, upon whom 129 operations were performed. These included 87 of gastric ulcer or its consequences, 7 of duodenal ulcer, 16 of pyloric stenosis apart from ulcer, 7 of stenosis due to pericholecystic adhesions, 4 to stricture caused by corrosive poisons, 1 to generalized gastric corrosion, and 2 to acute dilatation of the stomach. In 94 there was a history of gastric ulcer, and to these is attached the main interest of the paper. Of the first series of 38, Dr. Busch has been able to find only 17, and of the second series 10 were set aside as having been operated on within a year, and of the remainder only 59 could be discovered; this makes 76, of which 64 were gastro-enterostomies and 12 resections; of these 76 cases 10 died during the early years, 8 from intercurrent diseases without reference to the stomach, and 2 from gastric cancer; but, of the whole number, 65 were free from any symptom of stomach trouble up to their deaths or to the date of examination. Of the remainder, 8 were able to work, but suffered from slight stomach disturbance, and 3 had been attacked by secondary cancer supervening upon the old ulceration. Dr. Busch concludes that the operation had been definitely curative in 85.5 per cent. of the whole series, and it should not be forgotten that all had been subjects of long-standing ulcers which had proved refractory to medical treatment. Of the 12 cases treated by gastrectomy, all, when examined, were in good health; of the 64 gastro-enterostomies, 56 were absolutely cured; in 5 the cure was incomplete, and in 3 secondary cancer had developed. He draws attention to the small proportion of cases which had become cancerous as indicating that this transformation is less common than has been asserted in some quarters. Dr. Busch recommends resection whenever there is any suspicion of a new growth, and also in large callous ulcers, especially when these have invaded the neighbouring organs, the liver and the pancreas, but he admits there is room for difference of opinion, and the choice must rest with the individual surgeon whether in a given case he will perform resection or gastro-enterostomy.

[1] BRITISH MEDICAL JOURNAL, 1908, vol. i, p. 19.
[2] *Arch. f. klin. Chir.*, 1909, xc, I.

SIMULATION OF FOREIGN BODIES.

THE dread of leaving a sponge or a surgical instrument in the peritoneal cavity is a constant source of annoyance to the operator, as the accident is not rare, in spite of all precautions. Experience has shown that a foreign body in some cases makes its way through the abdominal wound. A forceps or a sponge has been known to deliver itself in this manner. Professor Lecène reports a case in his own operative practice where a puzzling complication simulated the intrusion of a foreign body into the cicatrix of an abdominal incision.[1] In February, 1907, he performed posterior gastro-enterostomy on a man aged 40, subject to stenosis of the pylorus, etc. A median incision was made, reaching down to the umbilicus. Six months later the patient consulted Professor Lecène on account of dyspeptic troubles. He detected a hardening in the upper part of the cicatrix, an unfavourable symptom under the circumstances, but suggestive of a worse complication than a derelict foreign body. The patient was kept under observation, and in March last, two years and a month after the operation, Professor Lecène found that a big incisional hernia had developed, wide enough to admit two fingers between the recti. The upper limits of the incision were covered in by a hemispherical resistant body of bony hardness, almost immovable, being imbedded in cicatricial tissue. It felt very unlike an organic structure, such as a malignant growth, and Lecène began to suspect that some instrument must have been left behind at the first operation after all. He had used catgut exclusively for ligatures. In April last he operated once more. The cicatrix adhered to the left lobe of the liver, and the anterior surface of the stomach. It was excised, and the hard body proved to be an area of true bone, with Haversian canals and marrow developed in very dense cicatricial tissue. The dyspeptic symptoms disappeared after the second operation.

[1] Ossification dans une cicatrice de laparotomie. *Bull. et mém. de Soc. Anat. de Paris*, May, 1909, p. 279.

PRE-ALBUMINURIC RETINITIS.

THE symptom complex often called Bright's disease was at one time regarded as primarily a disease of the kidneys, but it was soon realized that this organ only shared in degenerative changes which were common to the whole organism. The exciting cause was supposed to be a toxaemia, due either to intestinal intoxication or to deficient elimination of the products of tissue metabolism. Recent experiments have confirmed this view, and have shown that the poison is formed in the blood as an antibody to certain substances contained in the kidney; it is, in fact, a nephrotoxin. If a dog be injected with crushed rabbit's kidney several times, his serum contains a large amount of rabbit nephrotoxin. The dog's serum is now highly toxic to rabbits, inducing a rapidly fatal nephritis. Zur Nedden went further and showed that if the serum be injected directly into the carotid of the rabbit the animal developed the typical picture of albuminuric retinitis. Such being the case, it would not surprise us to find examples of albuminuric retinitis with healthy kidneys. Martin (*Ophthalmology*, April, 1909) discusses the general question of the pathogenesis of Bright's disease, and concludes that nephritis is only

an incident in a general toxaemic state. He then describes a form of haemorrhagic retinitis which exists before albumen is present in the urine, but which is often a precursor of typical albuminuric retinitis. The disease is characterized by delicate flame-shaped haemorrhages lying in the course of the arteries. They are transient, often disappearing in a marvellously short time, leaving no trace behind. There are no visible changes in the retinal vessels, nor is there any white exudate or oedema of the retina. In one case there was slight swelling of the nerve head. There is no diminution of vision, the condition being invariably discovered by chance. Martin regards chronic indigestion as a factor in all the cases he cites.

MEDICAL TERMS IN THE NEW ENGLISH DICTIONARY.

THE large treble part of this famous Dictionary[1] which has just appeared brings to a close the seventh volume of the work, and maintains the increased rate of publication which has been evident during the past two years. It is nearly thirty years since the first part was published, and there are to be ten volumes in all; even with the more rapid progress now attained, some years must yet elapse before the full complement of sections is in the hands of the subscribers to this truly national undertaking. The two hundred pages which make up the present part constitute a book in themselves, and contain a wonderful mass of interesting matter. The rubrics run from *Prophesy* to *Pyxis*, and they are so rich in medical terms that we can find space for reference only to a selected few. On turning the first page we immediately come upon *prophylactic*, a purely medical word with the root-meaning of something keeping guard before. *Prophylactical* is obsolete, and *prophylaxis* is not naturalized; but *prophylaxy* is admitted by the Editor. Sir James A. H. Murray may be technically correct in so adjudicating the claims of the three last-named words; but in medical works, if our memory serves us, *prophylaxis* is much more often seen than *prophylaxy*. The illustrative quotations are, as usual, wonderfully well chosen. From a book dated 1605 comes the sentence: "Yoo haue not very carefull "beene, T'obserue the prophilactick regiment Of your "owne body." From Watts's *Logic* (1725) is taken the following definition: "Medicine is justly dis-"tributed into prophylactick, or the art of pre-"serving health; and therapeutick, or the art of "restoring health." A more recent work (*Lux Mundi*) contains the significant phrase: "With men, as "with animals, suffering is largely prophylactic." Folklore and scientific prophylaxis are well-illustrated in the following quotations: "A serpent's skin is still "looked upon in Egypt as a prophylactic against com-"plaints of the head" (*Blackwood's Magazine*, 1828), and "Vaccination, which has now stood the test of "practice for a century, remains to-day one of the "greatest medical prophylactics the world has ever "known" (*Allbutt's System of Medicine*, 1897). *Proptosis*, meaning the protrusion or prolapse of some part of the body and especially of the eye, has a modern ring in it, but Sir James Murray brings forward an illustrative quotation from a book published in 1676, "when the uvea sticks out above the "cornea: 'tis called proptosis" (Cooke, *Marrow of Chirurg.*). *Prosector*, however, is comparatively modern, the earliest illustration of its use being dated 1857; it is defined as "one whose business is "to dissect dead bodies in preparation for anatomical "research or demonstration, as assistant to a lecturer "on anatomy, a surgeon, or a zoological society." Indeed, the Dictionary defines the most modern of terms—for example, *propons* (part of the medulla), *prosencephalon*, *prosenchyma*, *prosopalgia* (face-ache), *proteolysis*, and *proteose*. As an instance of the extreme care which is taken to ensure accuracy, we may refer to *proteolysis*, to which the following explanatory note is added: "Although parallel in form "to electrolysis and hydrolysis . . . proteolysis is "not parallel in sense"; in other words, it does not mean splitting up of something by proteins, but splitting up of proteins by ferments or the separation of proteins from a protein-containing mixture. The word *protoplasm* has an interesting history attached to it; it seems to have been first employed by Von Mohl in 1846, and it made its appearance for the first time in an English book two years later (1848). *Protoplast*, on the other hand, is an old word, going back to 1532, but for more than three hundred years it was used in a theological or philosophical sense; thus Ignatius was termed "the protoplast Jesuit," and Andrew Melville "the protoplast Presbyterian in Scotland." An old English medical term is proud-flesh; the word *proud* appears here in the sense of overgrown, exuberant, or too luxurious, and the meaning of the expression is the "overgrown flesh arising from "excessive granulation upon, or around the edges "of, a healing wound"; it is first found in English in Lanfranc's work on surgery written about 1400. For once we are inclined to question the accuracy of the definition of a medical term, namely, *pubiotomy*; it is defined as "the operation of section through the "*symphysis pubis*, especially in obstetric practice," but it is used at the present day in connexion with sawing through the pubic bone rather than the symphysis. Another interesting medical term, dealt with at some length, is *pulse*; and in the notes under this rubric we find that *pulse-pad* was once a humorous appellation for a medical men. "These Pulse-pads, these "Bedside Banditti" is the illustrative quotation in which this nonce-word appears. But we might go on for hours skimming the surface of this Dictionary and gathering up etymological and lexicographical details of importance and value; and we shall close by simply naming some of the other terms contained in the present section of the work, namely, *prurigo*, *pruritus*, *prussic acid*, *psammoma*, *pseudarthrosis*, and many words beginning with *pseudo-*, *psilosis*, *psoas*, *psora*, *psoriasis*, *psychology*, and many other *psycho's*, *pterion*, *pterygo-*, *ptomaine*, *ptosis*, *ptyalism*, *puberty*, *pubes*, *pudendum*, *puericulture*, *puerperal*, *pullulate*, *pulmo-*, *pupil*, *purgation*, *purine*, *purpura*, *pus*, and *pyuria*.

[1] *A New English Dictionary on Historical Principles*. Edited by Sir James A. H. Murray. Prophesy—Pyxis (Vol. VII). Oxford: at the Clarendon Press, etc. Henry Frowde. Treble Section. 7s 6d. October 1st, 1909.

THE SUPPRESSION OF THE MOSQUITO.

MAJOR P. G. ELGOOD, director of the police school, Cairo, has given in the *Cairo Scientific Journal* for July an interesting account of how an officer without medical training may, by diligently following the recommendations of his sanitary advisers, succeed in suppressing mosquitos, even under unfavourable conditions. The police school formerly occupied an extremely insanitary old palace in the heart of Cairo; the buildings, covering about three acres of ground, consisted of a few fine apartments and some two hundred comparatively small rooms, almost every one of which had a private cesspit. There were also three ponds of stagnant water, and the palace was bounded on the east and south by dilapidated buildings, inhabited for the most part by Egyptians of the lower class. In these circumstances it is not surprising that mosquitos were numerous, and eventually they became so fierce and voracious

that Major Elgood could not sit in his rooms after sunset, and the cadets were unable to obtain sleep. The Public Health Department was invited to take the matter in hand, and within a few weeks the palace became freer of mosquitos than most buildings in Cairo. In the summer of 1908 the quarters for the school at Abbassia were nearly complete, but there was considerable delay in making the buildings ready for habitation, and for four months Major Elgood lived alone within the precincts of the school, which extend to 22 acres. In a very short time the mosquitos became a serious nuisance, and so long as the workpeople were about it was found imposible to prevent the use of the yet unfinished latrines. Within a fortnight after the departure of the contractors and their men the school was freed from insects. The system followed is to pour a third of a teacupful of crude petroleum oil once a week down each of the 182 latrines, sinks, and other possible mosquito-breeding places in the school; twice a week each receptacle for water is emptied and refilled. Cadets are detailed indiscriminately for the duty, one of the objects in view being to impress upon all that mosquitos can be destroyed by the expenditure of little trouble and less money. Major Elgood calculates that the cost of the work at the school is about 50 piastres (10s.) a month. The success of the means adopted has surprised him, and one of his difficulties has been to convince his staff that such simple means could be effective.

FLIES AS CARRIERS OF INFECTION.

A FURTHER preliminary report on the investigation authorized by the President of the Local Government Board on flies as carriers of infection has been issued.[1] It contains a memorandum by Dr. Copeman discussing the best lines of investigation to pursue. The general plan he recommends is that a centre should be selected where large quantities of house refuse and other fermentable material, or stable manure, are deposited or allowed to accumulate, and that, at varying distances from fifty to a hundred and fifty yards, fly stations, at least half a dozen, should be established round this centre where flies can be captured. It is stated that, in the event of flies being trapped locally the species of which is unknown, specimens may be packed, preferably in tissue paper, enclosed in a match-box, and dispatched at once to Mr. E. E. Austen, British Museum (Natural History), South Kensington, London, S.W., with a brief note as to the date, locality, and other circumstances of their capture. The report contains a note by Mr. Jepson stating that flies may be marked by dusting them with coloured blackboard chalk, the best for the purpose being brick-red. Dr. G. S. Graham-Smith, University Lecturer in Hygiene, has made some preliminary experiments on the presence of colon bacilli either on the surface or in the intestine of flies. The species examined have been house-flies, mainly *Musca domestica;* small flies, mainly *Homalomyia canicularis;* and three species of blue-bottles, including *Calliphora erythrocephala* and *vomitoria*, and *Stomoxys calcitrans*. Of 28 flies obtained from the neighbourhood of decaying animal matter at Cambridge, 15, or 54.5 per cent., were found to be infected. Of 26 flies from a house near glue works in Bermondsey, 4, or 15 per cent., were infected. Of 18 flies from the kitchen of a London County Council school, 4, or 22.2 per cent., were infected; and of 40 flies taken near a jam factory in Bermondsey, 4, or 10 per cent., were infected. The various sorts of flies were infected in approximately equal numbers, and surface infection was two and a half times more common than intestinal; the numbers are, of course, too small to allow any positive conclusion to be drawn. The concluding part of the report is a note by Professor Nuttall and Mr. F. P. Jepson, B.A., Student in Medical Entomology, Cambridge, on the part played by *Musca domestica* and allied non-biting flies in the spread of infective diseases; it consists of a summary of published information, with a bibliography filling 11 pages.

[1] London: Wyman and Sons, Ltd.; Edinburgh: Oliver and Boyd; and Dublin: E. Ponsonby. 1909. (3d.) The first report was noticed in our columns on June 26th, 1909, p. 1565.

BLINDNESS IN EGYPT.

ELOUI PACHA, late Chief Inspector of the Government Schools in Egypt, contributes to the *Revue générale d'ophtalmologie* for June, 1909, an article on the prevention of blindness, and the amelioration of the lot of the blind in Egypt. When the author took up his work in 1883, he found that 85 per cent. of all the scholars had granular lids, and 75 per cent. had, in addition, other diseases of the eye. This enormous proportion was due largely to the dirty habits and the ignorance of the natives, aided by the swarms of flies which carry infection from eye to eye. At this time, too, there were practically no ophthalmic surgeons to combat the ravages of the prevalent diseases. Eloui Pacha was, during his first three years of office, much impressed by the terrible ravages of acute ophthalmia, so acute that it rarely failed to damage the eye. He determined to start the campaign against trachoma and ophthalmia in the schools. Scholars affected with contagious eye disease were segregated from the healthy; hygienic regulations were introduced; and lessons in elementary hygiene were given by Eloui Pacha himself. Frequent washing in clean water was insisted upon; the school furniture was modified and adjusted to the height of the scholar; illumination was improved; errors of refraction corrected; and, finally, septennial revaccination was enforced. The effects of these efforts soon became evident. The schools which had hitherto been foci from which ophthalmia spread, became, in a few years, centres which disseminated a knowledge of ocular hygiene. Swarms of flies were no longer attracted to the clean scholars, and so lost their importance as spreaders of contagion. In 1886 the first polyclinic was founded where eye diseases were treated gratuitously, and now over 6,000 patients attend every year. In 1882 many oculists settled in Egypt, chiefly in Cairo and Alexandria, and in consequence a steady diminution in the frequency and intensity of ophthalmia is evident. The Egyptian Congress of Medicine held in 1902 recommended that eye hospitals should be founded in the chief centres of population, and a munificent gift by Sir Ernest Cassel enabled a start to be made, and the travelling hospitals were instituted. Now the Government have decided to build three ophthalmic hospitals in the provinces—at Assiout, at Tanta, and at Mansourah. Four dispensaries have been opened in Cairo, and are in full activity. At present little has been done to ameliorate the lot of the blind. There is, in fact, but one institution at Zeitoune, a suburb of Cairo. This was founded in 1901 by Miss Armitage, of London, and is managed by an international committee, presided over by the British Consul. It is recognized and subsidized by the Government. Blind children of all nationalities and religion are admitted. There are forty-two inmates and ten day scholars. Reading and writing, arithmetic, history, and geography are taught in Arabic, and a little English is begun. Mohammedans are instructed in the Koran, and Copts in the principles of their religion. Suitable trades are taught, such as basket making, brush making, and massage. Undoubtedly the Government will ultimately take the

matter up, and in the meantime Eloui would like to see the re-establishment at the mosque of El-Azhar of the section created in the time of Malelouk for the instruction of the blind.

THE PROCEEDINGS OF THE ANNUAL MEETING, 1909.

With this issue the publication of the proceedings of the Annual Meeting of the British Medical Association at Belfast is concluded. The meeting, so far as its scientific proceedings are concerned, commenced less than twelve weeks ago, and fifteen Sections met for discussion. Complete accounts of other scientific congresses rarely appear in less than a year or more, so that the rapidity with which members of the Association unable to be present at Belfast have had a full account of what passed laid before them is a matter for congratulation. It may be pointed out that the ordinary work of the Journal has not suffered, the contents of the Journal throughout the past three months having been on all-fours with those that appear at other times. In other words, the plan adopted some years ago in deference to the wishes of those who disliked the substitution of sectional matter for ordinary papers has been continued. The statistically curious may possibly be interested to hear that the reports of the proceedings have absorbed altogether approximately 600 columns.

Medical Notes in Parliament.

[From Our Lobby Correspondent.]

The Housing and Town Planning Bill came on for its final stages in the House of Lords on Monday. At first there was a small attendance, and Lord Cawdor brought up an amendment to insert a new subsection to Clause 56, enabling the Commissioners to be appointed by the Development Bill to confirm an Order of the Local Government Board, and so save the expense and loss of time involved in obtaining a Provisional Order. The proposal was supported by Lord Salisbury and Lord Onslow; but Lord Crewe could not accept the amendment, although he recognized in it an admission that the Provisional Order system which had been inserted in Committee was cumbersome and expensive. Lord Cawdor then withdrew the amendment and brought it up later, when, after some debate, it was finally withdrawn, on the advice of Lord Lansdowne. In Clause 15 the Duke of Northumberland added words defining a landlord as a person who lets a house to a tenant for his own occupation. On Clause 17 an amendment was made by Lord Beauchamp, whereby in case of failure by the local authority the Local Government Board could make regulations. An amendment was also made in Clause 57, and then on Clause 61 Lord Malmesbury moved the addition of words providing for extra compensation for the landowner at the discretion of the arbitrator. Lord Crewe opposed the amendment as a very serious matter, but it was carried by 80 votes to 14. A discussion was then raised on the inclusion of Crown lands by Lord Salisbury moving a new clause. After several speeches, however, the proposal was withdrawn after Lord Crewe had pointed out the difficulty of accepting it and stating that he was somewhat sceptical as to the bill as amended ever passing into law. On the question that the bill pass, Lord Camperdown strongly condemned the bill as imposing a heavy burden on the ratepayers. The third reading was then passed without a division, and will be returned to the Commons in its altered form.

Feeding Suffragettes in Prison.—Mr. Keir Hardie followed up his former questions by asking Mr. Gladstone last week whether he could state the number of cases, distinguishing between males and females, for each year during the years 1900–9, in which forcible feeding had been resorted to in prisons under his charge on prisoners who were not certified to be insane. Mr. Gladstone said he was collecting information, and would communicate it when received. It would take some days to collect, and could not in any case be complete. He might mention three cases which had come under his notice. One was a Russian convict at Dartmoor, who refused food, saying that he had learnt the hunger strike in Russia. Another was a surety prisoner detained for a fortnight in Preston prison, who threatened to starve himself, but gave way on being told he would be artificially fed. A third was a convict in Parkhurst, who refused food, and was artificially fed for about a year. No harm whatever was done him by the process, and at the end of that time he resumed feeding in the ordinary way. Mr. Keir Hardie then asked if a separate tube was used in each case at Winson Green, and Mr. Gladstone said that the medical officer followed the same course as was usual in hospitals and private practice. A new tube was not used in each case, but after use the tube was thoroughly cleansed by passing through it a continuous stream of water, and it was then kept in a solution of boracic acid and again thoroughly washed out before use. Mr. Gladstone, in reply to a further question as to the need to have a separate tube for each person, said he was advised that there was really no distinction between a tube used on more than one person and a new tube. A new tube would have to be cleansed in exactly the same way. Next asked as to what report he had received about the treatment of Miss Laura Ainsworth, Mr. Gladstone said that the medical officer reported that an instrument which was constantly used by dentists and anaesthetists, and which was made of steel, protected from the teeth by indiarubber, was used to open the mouth. Very little force was required. An ordinary wooden mouth-prop was used to keep the mouth open. As regards the last part of the question as to keeping her in irons, immediately after her reception on September 22nd Miss Laura Ainsworth broke her cell windows, and was placed in handcuffs to prevent her from doing further damage. The handcuffs were removed the following day, when her conduct became more orderly. Compulsory feeding did not begin in her case until two days after the handcuffs had been removed, and, as he had already stated, no handcuffs or irons were used at any time during the process of administering food.

Colour-Blind Tests (Foreign Nations).—Mr. Henniker Heaton asked the President of the Board of Trade whether he was now in a position to give the results of his inquiries as to the tests for colour-blindness used by foreign nations. Mr. Tennant said that the Board of Trade was already in possession of a considerable amount of information with regard to the colour vision tests adopted by the principal maritime countries for their merchant services. With a view, however, to making the return moved for and ordered on July 14th as complete as possible, they had requested the Foreign Office to obtain further detailed information in the case of certain important countries. On receipt of that information the return in question would be presented.

Tuberculosis among Soldiers.—Last week, in answer to Mr. Summerbell, Mr. Haldane stated that the number of men discharged from the army for tubercle of the lung during the last ten years was as follows: 1889, 224; 1900, 328; 1901, 350; 1902, 334; 1903, 301; 1904, 440; 1905, 333; 1906, 400; 1907, 304; 1908, 272. While in hospital patients suffering from tubercle of the lung were kept apart from other patients, and treated generally as cases of infectious disease. On discharge a notification was sent to the medical officer of health in the town or district where the man proposed to reside. Asked if he thought it fair to place such responsibility

on the municipalities, Mr. Haldane said that applied not only to the army but to every other department of the State. It might be a very proper subject for consideration. Asked also what provision was made for these men, Mr. Haldane said that every effort was made to get provision made for these men, to get them taken into homes, but the War Office had no funds for the purpose of providing for their after-treatment, and if it was done it must be done at an increase of the Army Estimates. Great care was taken of them as far as the medical officers were concerned, and every effort was made to get them places.

Tuberculosis in the Navy.—In answer to Mr. Summerbell, Mr. McKenna stated last week that the number of officers and men finally invalided from the service (including Marines) for tuberculosis for the years 1899 to 1908 was 2,673, made up as follows: 1899, 207; 1900, 165; 1901, 232; 1902, 288; 1903, 334; 1904, 353; 1905, 331; 1906, 214; 1907, 266; 1908, 283. No special provision was made for their treatment on their discharge in a home or hospital. They were paid gratuities or pensions, according to their service, under the ordinary regulations. All the men, before being accepted for service, were medically examined.

Tuberculosis among Postal Employees.—Mr. Summerbell inquired on this subject, and Captain Norton, who answered for the Postmaster-General, said that the number of established Post Office servants superannuated on account of tuberculosis during the past ten years was as follows:

	Men.	Women.
1899	72	11
1900	82	11
1901	95	21
1902	76	6
1903	104	15
1904	109	19
1905	96	18
1906	101	15
1907	81	15
1908	90	20

The established force to which these figures referred numbered in 1908 (in round figures) 90,000. There was no official arrangement for affording treatment to Post Office servants suffering from tuberculosis. Every established officer retiring on account of ill health was entitled either to a pension or a gratuity under the terms of the Superannuation Acts.

Lead Poisoning in the Swansea District.—Questioned on the increase of lead poisoning in the Swansea district by Mr. Duncan, the Home Secretary stated that the number of cases in 1908 was 38, as compared with 9 in 1907; but in the first eight months of this year there were 24 cases, as compared with 28 in the corresponding period of 1908. A special inquiry had been made by one of the medical inspectors of factories in regard to lead smelting and certain allied industries, and his report, which included recommendations for further precautions, had just been received, and was under consideration.

Chinese Pork.—In answer to Mr. Fell, the President of the Local Government Board said that he was informed that 1,182 carcasses out of the whole consignment of Chinese pork had been thawed out and examined; 107 carcasses had been condemned; and the remaining 1,075 carcasses had been passed as fit for consumption. He understood that a report to the Corporation by the medical officer of health, in which he referred to the results of the examination of the carcasses, so far as it had at present been carried out, would be issued. He could not undertake to prohibit the importation of Chinese pork. In answer to a question by Mr. Kilbride, Mr. Burns said that inquiries were made by the Local Government Board some months ago, before this consignment arrived, as to the character of the pork and as to the method of feeding the pigs, and the Board was satisfied that it was satisfactory. He had himself gone with his officers into refrigerating stores in the wholesale market and into the retail shops, and he also had the pleasure of going down to the New Cut, Lambeth, on Saturday night, to see whether the opinion of those better qualified than himself could be affirmed by a layman. He had himself tasted the pork. Condemned carcasses, whether they come from America, Ireland, Scotland, Wales, or any part of England, were not allowed to be used for human consumption. The Port Sanitary Authority and the riverside local authorities when they condemned animals as being unfit for human consumption either had them chemically destroyed or sent them to the dust-destructor to be burned.

Deaths from Hydrophobia.—Asked on Monday by Sir George Kekewich, Mr. Burns stated that the number of deaths from hydrophobia and the death-rates per million of population in Great Britain in each of the years from 1878 to 1907 were shown in the appended table. Similar information as regards France was, he was informed, not available:

Year.	Number of Deaths in Great Britain.	Death-rates per Million Persons Living.
1878	51	1.78
1879	39	1.34
1880	40	1.36
1881	37	1.24
1882	30	1.00
1883	34	1.12
1884	29	0.94
1885	60	1.93
1886	26	0.83
1887	29	0.91
1888	14	0.44
1889	30	0.93
1890	8	0.24
1891	7	0.21
1892	6	0.18
1893	7	0.21
1894	13	0.38
1895	20	0.58
1896	8	0.23
1897	6	0.17
1898	2	0.06
1899	—	—
1900	—	—
1901	1	0.03
1902	3	0.08
1903	—	—
1904	1	0.03
1995	—	—
1906	—	—
1907	—	—

The Health Resorts and Watering Places (Ireland) Bill was read a third time and passed, with amendments, on Thursday in last week. It was backed by all parties in Ireland and empowers local authorities to advertise health resorts.

Asylum Officers' Superannuation Bill.—When the second reading of this bill was moved in the House of Lords by Lord Monk Bretton on Wednesday it was opposed by Lord Belper, mainly on the ground that it involved a compulsory charge on the rates without an imperial contribution, as in the case of the police, and that it applied to persons other than attendants in direct contact with lunatics. The bill was strongly supported by the Archbishop of Canterbury, the Lord Chancellor, and the Earl of Halsbury, and was read a second time without a division.

The German System of Meat Inspection. — On Monday Mr. John Burns stated, in reply to Mr. Watt, that he was aware of the system adopted in Germany for securing uniformity of meat inspection. He did not think it would be practicable to enforce a similar system in this country at the present time; but, both by circulars which it had issued and by the inquiries made by its inspectors, the Local Government Board had pressed upon local authorities and their officers the importance of uniform and efficient meat inspection. He was happy to say that in the country generally there had been a distinct improvement during the last few years in the qualifications of meat inspectors and the practice of meat inspection.

Scotland.

[From Our Special Correspondents.]

Extension of Edinburgh University Medical Buildings.

Last week reference was made to the extension of the Royal College of Surgeons' buildings; the university authorities also find it necessary to provide increased accommodation for the prosecution of the work of teaching and study. Especially in the Physiological Department the policy of expansion has been forced upon the school, so that during the vacation the authorities undertook certain alterations and additions; these additions were pushed on rapidly, and it is expected that the buildings will be available in the course of the present month.

For many years the laboratory for physiological chemistry has been overcrowded, and for teaching purposes the classes have had to be taken in detachments. It was principally to meet this difficulty that the work of extension has been undertaken. Twelve tables have now been fitted up, each accommodating 10 students, a total in all of 120. A gallery has been erected to enable the laboratory assistants to prepare material. The tables, which are supplied with gas and water, are covered with a white enamelled lava, impervious to acid and practically indestructible. Fourteen fume chambers have been fitted up, and every appliance is of the most modern description. The old chemistry room has been refitted as a laboratory for special research in chemical physiology, a department which is now receiving much more attention than formerly, and gas, water, steam, and electrical arrangements are of the most approved character; there is also a balance room, and a dark room.

A most important part of the work is the erection of a new lecture-room on a piece of vacant ground at the south-west corner of the university new buildings. It is a building of one story, the outer walls being of cream-coloured sandstone. The architectural design is in keeping with the original buildings. Accommodation has been provided for about 350 students. Light is obtained from glass cupolas in the roof; the artificial light is electricity. Pendants hang from the roof, and there are groups of Tantalum lights, all under the control of the lecturer. The seating accommodation is provided by bentwood chairs of a novel design; each chair has a continuation of the right arm, which may be used as a book-board when writing.

New Lecturer in Anatomy at Queen Margaret College, Glasgow.

As was recently pointed out, the policy of the University Court has been to transfer from Queen Margaret to Gilmorehill the medical classes which require laboratory instruction. In this way the women students not only are obtaining professorial instruction, but also have the advantage of the excellent laboratory accommodation of Gilmorehill. In the case of anatomy, however, Gilmorehill is no better off than Queen Margaret College, where there is a thoroughly equipped department specially designed for the teaching of anatomy. It was, therefore, obvious that the women students would continue to remain at Queen Margaret College, but some curiosity was felt regarding the teaching arrangements that the Court would make, as it was thought not unlikely that the Queen Margaret Anatomical Department would be placed directly under the charge of the Professor of Anatomy. Instead of this, the Court decided to maintain the old arrangement of a separate lecturer for Queen Margaret College, and appointed Dr. W. K. Hutton, who has for several years acted as senior assistant to Professor Cleland. In Dr. Hutton Queen Margaret has obtained an excellent teacher, who brings to her service ripe teaching experience and great power of organization. We are sure that under Dr. Hutton the anatomy department will maintain the high reputation which it has gained under Dr. Bryce.

Registration of Nurses.

The Association for the Promotion of the Registration of Nurses in Scotland has just issued a pamphlet in which are set forth the reasons why registration is desirable, and how this desired end may be attained. The pamphlet points out that registration, to be of any value, must have the sanction of the State, and that if this registration is sanctioned the State would have to determine the body by whom registration should be carried out. This, unfortunately, is just where the different parties desirous of effecting registration cannot agree. There are three bills before Parliament, and this pamphlet is published and circulated amongst the nurses in Scotland to help them in coming to a decision as to which scheme they prefer. Naturally, emanating as it does from Scotland, the Association considers the Scottish bill the best; the chief differences seem to be that in the Scottish Bill the Registration Council represents the nurses, the training schools, the medical profession, the universities, and the Government departments, while in Lord Ampthill's bill the Registration Council only represents the nurses. The Scottish bill accepts for registration purposes the certificates of recognized training schools and admits fever nurses and mental nurses to a special register; this Lord Ampthill's bill does not do. The registration fee in the Scottish bill is 2 guineas, while in the English it is 5 guineas. It will be unfortunate if some understanding is not come to by the promoters of the several bills.

Death of Sir Arthur Mitchell.

Sir Arthur Mitchell, M.D., K.C.B., who was a member of the Lunacy Commission in Scotland from 1857 until 1895, died at his residence in Edinburgh on October 12th at the age of 83. He was a member of the Universities (Scotland) Commission which sat from 1890 to 1897. He took great interest in archaeological and antiquarian research, was Rhind Lecturer in Archaeology from 1876 to 1878, and was appointed Professor of Ancient History to the Royal Scottish Academy in 1878.

Bequests by Dr. Robert Pollok.

Although Dr. Robert Pollok, of Laurieston House, Shields Road, Glasgow, who died recently, did not leave any bequests to institutions in his will, he suggested to the residuary legatees, in a separate writing, that, on their demise, £10,000 should be given to the Victoria Infirmary, Glasgow, for the endowment of a ward, to be called "The Dr. Robert Pollok Ward," and that £10,000 should be given to the University of Glasgow for the endowment of a lectureship for original research in Materia Medica. The residuary legatees are Dr. Pollok's sisters—Mrs. Gilchrist and Miss Pollock—and we understand that it is their intention to carry out this desire expressed by their brother. In the meantime, of course, they have the life-rent of the money.

Ireland.

[From Our Special Correspondents.]

Women's National Health Association.

The autumn executive meeting of the Women's National Health Association of Ireland, held on October 7th in Dublin, under the chairmanship of the Countess of Aberdeen, was attended by nearly 100 members. It was stated that the Association now possesses 180 branches. From the report of the executive committee it appears that 32 extra district nurses, 25 of whom belong to the Queen Victoria Jubilee Institute, have been appointed in Ireland during the last eighteen months through the means of the Association, and that two health workers and five nurses have been appointed independently by branches. A number of patients have been sent to sanatoriums, homes, and hospitals at the cost, or partial cost, either of the central association or one of its branches, and in some cases rent has been paid for extra rooms for families. Shelters for patients under

medical and nursing supervision have been provided, with good results, and at the request of one of the Mid-Antrim branches, the Ballymena Board of Guardians has provided nine such shelters, one for each dispensary district. The Admiralty has authorized the use of certain disused coastguard stations for the purposes of the association, and the first of these, opened as a health home on August 4th, has already received thirty-four inmates belonging to families where they have been exposed to infection from tuberculosis, though certified free from the disease themselves before admission. In addition to the tuberculosis exhibition, which has visited several districts in Ireland, a caravan designed to meet the need of outlying places has travelled round Donegal, has visited the counties of Armagh, Tyrone, and Fermanagh, and is now working in the West of Ireland. A course of five health lectures in addition to those supplied by local branches, and by the kindness of the medical profession, has been given in many parts of the country. Schemes for providing and distributing pure milk from healthy cows have been carried out in Belfast, Armagh, Carlow, Killarney and Cork. A pasteurized milk dépôt for infants has been established in Dublin, and a refreshment van selling pasteurized milk and other wholesome foods and drinks has been established by the association in Phoenix Park, especially for the benefit of the football players, who have given it a very hearty welcome. Schools for mothers have been established at Belfast, Dublin, Cork, and Londonderry, and in Belfast 1,000 babies have been entered on the books of the four babies' clubs established in the city. In connexion with these clubs classes in home nursing and sick aid for elder girls have been given, and have been well attended. In Dublin 180 lectures and cookery demonstrations for mothers were given by the society's lecturers during the summer. The Registrar-General, Sir Robert Matheson, in discussing the statistics of tuberculosis in Ireland, said that returned emigrants suffering from the disease were often the means of infecting their families. Much of the criticism of the work of the Women's National Health Association was, he thought, founded on misconception. The statistics contained in the Registrar-General's report represented hard facts and could not be explained away. The decrease in the death-rate during recent years should encourage all workers to persevere. The following resolutions were unanimously adopted:

The Executive of the Women's National Health Association of Ireland have learnt with great gratification that the School Managers in connexion with the Roman Catholic, the Church of Ireland, the Presbyterian Church in Ireland, and the Methodist Church have expressed their readiness to make themselves responsible for one half of the cost for the heating and cleaning of National Schools, in accordance with a scheme to be worked out in consultation with the Chief Secretary, and in response to his suggestion made to the Deputation of the Women's National Health Association of Ireland on May 24th.

The Executive of the Women's National Health Association of Ireland understand that it would be impossible for the Chief Secretary to obtain the promise of any grant from the Treasury for the Commissioners until the commencement of another financial year next spring. They therefore hope that the school managers throughout Ireland will make the effort to show their earnestness in the matter by themselves inaugurating the proposed scheme this winter by spending their proportion of the proposed funds during the winter months, and keep an account of the same, which can be hereafter presented to the Irish Government as an additional argument for obtaining from the Treasury the hoped-for grant of the half of the total amount.

The Women's National Health Association of Ireland pledge themselves, through their branches, to co-operate with any local efforts that may be made to raise the required sum.

An Echo of 1903.

It was in 1903 that the famous Enniskillen meeting of the Irish Medical Association was held under the presidency of Dr. Leonard Kidd, now the representative of the Irish profession in the General Medical Council, and though not a member of the Poor Law service always one of its best friends. Led by him at that meeting it was resolved that no medical practitioner should take a dispensary appointment at less than £200 a year.

One of the first dispensaries to become vacant was that of Collon in the Ardee Union. No doctor could be found to take the post. The guardians would not give more than £100 a year, and after many months, during which they had to pay a locumtenent 4 guineas a week, the Local Government Board held an inquiry, and decided to divide Collon between the two medical officers of the adjoining districts, giving each an addition of £50 to his salary. The guardians objected, and so did the Irish Medical Association, which took the matter to the Superior Courts, with the result that an unfavourable decision was given. But the people of Collon have never ceased to grumble, finding it expensive to send eight or ten miles for a doctor. Memorial after memorial asking that the district should be re-established has been sent to the Local Government Board and the board of guardians, and at last the guardians asked the Local Government Board to receive a deputation on the subject. The Local Government Board has declined to receive the deputation. It states that the population of the district has fallen from 9,192 in 1881 to 6,914 in 1901; that the facilities afforded to the sick poor in Collon district are adequate, and compare favourably with those of other dispensary districts in Ireland and that if every district of the same population were to get a dispensary doctor of its own the staff in Ireland would have to be increased from 810 to 1,969 doctors, and that it is the settled policy of the Board to decrease the number of Poor Law medical officers. We do not quite understand the latter statement, as we reported a few months ago the decision of the Board to increase the staff of the Castlereagh Union from four doctors to five. However, the whole system of dispensary districts in Ireland is so anomalous that a rearrangement is urgently needed. We reported not long since that the dispensary doctor of Ballina had to look after a population of 10,000 people, scattered over a huge district, while in the Ardee Union two doctors have only a population of 7,000 between them, and there are many districts where the anomalies in respect of area population and salary are still more glaring.

England and Wales.

[From Our Special Correspondents.]

LONDON.

Proposed Receiving House for Incipient Mental Disorder.

The London County Council on October 12th considered the report presented before the summer recess by the Asylums Committee in favour of the establishment of receiving houses for the reception of cases of incipient insanity.[1] The Committee recommended that legislation with this object be promoted in the session of 1910.

On behalf of the Finance Committee an amendment was moved by Sir George Goldie (in the absence through illness of Mr. Hayes Fisher) that powers be only obtained for the establishment of one receiving house.

Mr. A. F. Buxton, who seconded, suggested that it might be easier to get the bill through if only one receiving house was asked for.

Mr. Evan Spicer and Sir John MacDougall, however, pointed out that by getting full powers the Council would not be tied in any way as to the number of receiving houses ultimately established. Sir John MacDougall thought one receiving house would be practically useless, as it would not serve areas outside its immediate locality. The object of the reform was to close the lunacy wards of workhouses, but this would not be done with one receiving house, so that the existing expenditure would go on side by side with the new. There should be at least four houses.

Mr. Ernest Grey inquired, If the experiment is a failure, will any Council extend it? and added, If the

[1] British Medical Journal, July 24th, 1909, p. 234.

experiment is a success the amendment becomes a nuisance, simply delaying the accomplishment of a reform which everybody desired.

Mr. E. White, Vice-Chairman of the Council, said that receiving houses on the Continent did not always work satisfactorily, for it was found that patients were sometimes kept in them for years. The medical men would not sanction the removal of cases which presented features of interest. If the Council wished for further powers in the future, there would be no difficulty in inserting a clause in the Annual General Powers Bill.

Mr. Sidney Webb replied to this that further powers could not be obtained without a special Act of Parliament, as an amendment of the lunacy laws would be necessary. To go to Parliament twice when once would do would be unnecessary expenditure.

Mr. Whitaker Thompson suggested that the Council should not go too deeply into this experiment, as other ways of dealing with insanity were suggested in the report of the Royal Commission on the Control and Care of the Feeble-minded.

On a show of hands, 34 voted against the amendment and 29 for it, but a division resulted in a majority for the amendment of one, the voting being 45 for and 44 against.

A proposal to adjourn the debate for further consideration was voted down, and the Committee's recommendation as amended was then approved.

MANCHESTER AND DISTRICT.

Medical Inspection of School Children.

One of the most striking points in the recently issued annual report of the Manchester Education Committee for 1908 is the way in which the committee is taking up work formerly considered to belong to the board of guardians.

The old definition of destitution is no longer strictly observed, but the committee, like many other education authorities, sets up for itself a new and higher standard, and if parents cannot afford to bring up their children to this standard, they are assisted out of the rates. The cost to the rates for this additional work amounts to many thousands of pounds a year, only a small fraction of which is recovered from the parents. The excuse for this is, of course, that it is a good investment for the State, as present attention to the physical welfare of the children prevents them in after-years recruiting the ranks of paupers and criminals. There are not wanting signs, however, that the hard-pressed ratepayers will soon demand practical proofs, not theories, that the results of the experiments are worth the cost, and the question will arise, when there is a reform of the Poor Laws, whether some of the duties now being assumed by the Education Committee might not better be assigned to some more specialized authority.

At the end of December, 1908, Manchester had accommodation for 128,133 elementary scholars to meet the needs of 112,517 children. This accommodation, however, is not all available, as owing to the removal of the population from the city to the suburbs there is not enough accommodation in some of the outlying districts. The number of scholars on the books divided by the number of assistant teachers of all grades shows an average of 42 to each teacher. The scheme approved by the council for medical inspection provided that there should be 1 school medical officer, 1 woman and 3 men assistant medical officers, each devoting full time and having an allotted district, and 1 man assistant medical officer devoting part time, and specially engaged for infectious diseases. There are also 5 nurses, one to each medical officer. To meet the requirements of the Board of Education it was estimated that 18,000 children would be examined in the year—11,000 of 5 years of age and 7,000 of 13 years. This will have to be extended during the coming year. In the course of visits to the schools in connexion with infectious diseases, a number of children actually affected were detected by the medical officers, and altogether 189 children were excluded from school, 26 for diseases of the eye or ear, 47 for skin diseases, 103 for infectious disease, and 13 for various causes.

Skin Diseases.—In the case of skin diseases exclusion from school was followed up, where the children had no medical attendant, by giving information to the parents as to how these ailments could be treated. Eleven cases of prosecution for neglect are recorded. During the year no fewer than 1,846 cases of ringworm were notified by the teachers.

Eyesight.—The eyesight of 32,593 children has been tested, and notices sent to the parents of 2,064 where medical advice was needed. No less than 1,085 of these are recorded as not having received any attention after two months. In a few cases threats of exclusion from school have procured attention, and as the result of visits of the attendance officers 150 had spectacles provided, and 212 were reported as under medical care. The committee provided 336 pairs of spectacles, parents paying part of the cost where they could afford it.

Hearing.—During the year 1,593 were reported as suffering from defective hearing, and 512 of these needed medical attention. Parents were notified, but 278 names were returned after two months as not having been attended to. As the result of special visits of the attendance officers 68 received attention, and in 105 cases the parents promised to obtain medical advice. It is said that the actual number of cases of defective hearing must be much greater than the number reported.

Special Examinations.—The head teacher reported a large number of children as needing special examination, and a record is given of 229 thus examined, of which 55 were in connexion with an outbreak of diphtheria, 47 were mentally defective, 12 were stammerers, 55 were cases of eye disease, and 5 of ear disease, 2 of tuberculosis, and 12 of skin disease, in addition to various other ailments.

Meals.—The provision of meals is now under the personal supervision of the medical officer, who has examined 2,828 children, of whom 955 were well nourished, 640 showed signs of deterioration, and 1,233 were badly nourished. Meals were refused for 194 children, and the parents of 322 were asked to pay for the dinners, while 25 cases were reported to the Society for Prevention of Cruelty to Children.

Lectures to Teachers.—A course of twelve lectures on hygiene was given by the medical officer to 160 pupil teachers, but the medical officer thinks that at least twenty lectures ought to be given and provision made for adequate knowledge of hygiene and physiology, and we are told:

> It is quite certain that if the medical inspection of school children is to be used in order to obtain the greatest benefit for the children examined the teachers must be active helpers in the work and must be given an opportunity of educating themselves in order to take their proper place in the scheme. Without active co-operation and adequate knowledge on the part of the teachers, much of the benefit which should accrue from the medical inspection of the children will be lost.

Teeth.—Special investigations have been made as to the condition of the teeth, but the medical officer is unable to say that the condition is necessarily reflected in the physical condition. The smallest number of teeth in a child was 11, the majority of the children having 20 or more. During the investigation a number of other defects were found, but none of them had any direct connexion with the teeth. At the same time, the medical officer thinks that if the investigation could have included those aged 17 a definite deterioration due to defective teeth might have been shown. The percentage of those having defective teeth was very high, many children having a large number of teeth in an advanced state of decay. Parents were notified where dental interference was needed.

Home Conditions.—A large proportion of the children were subnormal both in height and weight, and a child which must be considered normal in certain schools falls decidedly below the Anthropometric Committee's standard. The facts found all point to home conditions of a highly unsatisfactory and often a most miserable character, and many of the

children, though not in a criminally neglected and verminous state, are ill cared for, badly fed and clothed, many of them dirty, and many suffering from rickets or anaemia. The good effects of a fortnight's stay during the summer at the country school at Mobberley are noted.

Afflicted Children.—Education authorities *must* provide instruction for blind and deaf children and *may* provide for feeble-minded, crippled, and epileptic. With regard to the blind and deaf, it has been the plan to send Manchester children to residential institutions, and Manchester has 24 blind and 63 deaf children in such institutions, while there is also a day school at which about 30 blind or partially blind are attending. For the feeble-minded there are four special schools where about 250 children attend, while 47 are inmates of the Sandlebridge school near Alderley Edge. On attaining their sixteenth year the children do not leave the colony but are permanently taken care of by the voluntary society to whom the colony belongs, the boys being put to work on the farm and the girls trained in the laundry and in housework, their work being, to a certain extent, remunerative. The late Dr. Ashby repeatedly pointed out the necessity in the special schools of practical teaching in handicraft trades, but he was convinced that it was useless to fill the special schools with a very low grade of children who could never be expected to earn their own living and needed close supervision. He thought residential institutions were needed for many, as without close custody they would sooner or later drift to the workhouse or recruit the criminal or inebriate classes. Crippled children are provided for at the Swinton residential school, where there are about 60 cases. The surgical treatment at the school is conservative, and excellent results have been obtained by good food, fresh air, and simple appliances. Spinal and hip-joint disease furnishes the bulk of the cases, and 14 had to be removed to hospital during the year for treatment which could not be carried out at the school. Only those cases are admitted in which there is a reasonable prospect of improvement, the most suitable being early tuberculous disease of the spine or joints and cases of rickets with progressive deformity. Epileptic children are sent to the David Lewis Epileptic School, near Alderley Edge, where the Committee has 48 children. But the Committee is now erecting a school of its own with accommodation for 100 children. In no other district in the kingdom is there anything like the same complete provision for afflicted children as that provided by the Manchester Education Authority.

Opticians and State Recognition.

At the annual general meeting of the Manchester and North of England Optical Society held last week, the President, Mr. J. C. Kidd, of Manchester, said that the desire for legislation to recognize the position of opticians as a profession could only be achieved by the combined efforts of the Worshipful Company of Spectacle Makers and the British Optical Association. The diplomas at present granted could only become of real value when the bodies which granted them received State recognition. In the discussion which followed, the importance of federation between existing optical organizations was insisted upon, and it was stated that in most of the States of America the optician had legal recognition. In bringing the discussion to a conclusion, the President said that he did not see why opticians should not follow the example of dentists, and be acknowledged by the medical profession. The matter is to be further discussed at the next meeting of the society.

BRISTOL.

Medical Inspection of School Children.

THE report of the medical inspectors for the Education Committee contains much interesting matter, and reflects great credit on Dr. Green, who is responsible for collecting his reports, with those of his colleagues, into a compact form.

The city was divided into five districts, and to each of them a part-time officer was appointed, who devoted two and a half hours three times a week to the work. Beginning in September, 1908, they for a month took a general survey of possible cases of underfeeding in some of the poorest districts as a preliminary to a scheme to be adopted by the Education Committee for providing meals. Dr. Green expresses his belief that the regular inspection which began in September has not only afforded valuable statistics for future use, but has proved of material benefit to the children. The inspectors began with the new admissions, examining next the senior scholars, but taking urgent cases at any time. In preparation for the visit of the inspector the head teacher obtained from the parent as much information as could be got as to whether the child had had any of the acute specific fevers, and also recorded its weight and height. The examination as a rule was made in the school, and the head teacher was present, as well as the parents, if they desired. When defects were recorded requiring attention, the parents were notified on a special card stating the inspector's advice; if no notice was taken, after a definite time a further notification was sent, or the superintendent attendance officer informed. The health visitor was appointed for his whole time, and visited the homes to impress upon parents the necessity of keeping their children's heads clean or having ear discharges attended to. In all, 3,081 children were examined, of whom 172 were referred for further examination, and 1,213 were found to have one or more defect. In all, 68 were found to be unfit, for some reason or another, to attend school, the various ailments being stated in the report. The number of children who appeared to be neglected, wilfully or otherwise, was 59.

Commenting on the facts disclosed by the inspection, Dr. Green states that in 75 per cent. of the cases the parents were present, and he remarks that this was helpful to the inspectors in more ways than one. Under the head of previous diseases it is noted that 66.3 per cent. had had measles, 7.9 scarlet fever, 44 whooping-cough, 30.3 chicken-pox, and 3.2 diphtheria. Sixty-four children were found to be insufficiently clad, but of these only 3 were over 9 years; "on the whole the tendency is to overclothe rather than the reverse." The condition of the head was found to be "dirty" in 119, requiring soap and water; 281 were verminous. Of these only 18 were boys; for girls the percentage was 16.3 of all examined, and Dr. Green expresses his regret that short hair is not the fashion for girls as well as boys. One of the inspectors—Dr. Carter—points out that the percentage in some schools is nearly 70, and that in other cases, as the parents have been notified, the index is too low. The number of defectively nurtured was 355, of whom 21 were classed "bad," no doubt owing to bad hygienic conditions at home and deficient, unsuitable food. This particularly applies to the central portions of the city, for in the outlying portions the houses are better constructed, and open spaces and parks are available. Malnutrition varies very greatly in different districts. Dr. Carter finds 36 per cent., Dr. Williams 4 per cent. On the whole, rickets does not appear to be a serious disease in Bristol. The report comments on the small amount of tuberculosis seen in glandular and osseous form, but the more serious pulmonary cases soon become too ill to attend school. In fact, only 0.08 per cent. were found, and these have been excluded from school. The mental condition was on the whole satisfactory; 146 were reported to be dull, and many of these suffered from defective vision and other conditions. A voluntary agency exists in Bristol to supply glasses, and has been to some extent patronized by parents. The condition of the mouth and teeth was bad, and Dr. Carter found as big a proportion as 60 per cent. among those examined by him, but 12 per cent. suffered from hypertrophied tonsils and adenoids, and while in a few cases no bad symptoms were observed, many suffered from the usual trouble coincident with this condition. In 3 per cent., or 103 cases, a purulent discharge from the ears was found. Thirty-three cases of congenital heart disease and

49 of acquired were noticed. Dr. Williams has included some figures on the measurements and weights of boys in various schools, comparing them with some recently published in the *Bristol Medico-Chirurgical Journal* by Dr. Rogers. The most striking thing in these was the fine standard of boys coming from a district where the fathers are in constant employment, for they come up to the standard of boys at Marlborough College, the highest in the tables.

The report gives the details of the treatment of defects found in the children, and expresses the appreciation of the inspectors of the help they have had in their work from the office staff and teachers.

LIVERPOOL.

The Medical Institution.

The formal opening of the session of the Medical Institution took place on October 7th, when the President, Mr. T. H. Bickerton, delivered the customary inaugural address, his subject being a sketch of the life and work of Dr. John Rutter, the founder of the institution. At the outset he pointed out that since the reconstruction and decoration of the building, completed in 1906, there had been an increase in the membership of 145, the total now being 421. After referring to the loss the institution had sustained during the past year through the death of Mr. George E. Walker, Dr. Tawse Nisbet, and Dr. H. W. King, of Chester, Mr. Bickerton drew attention to the munificent gift of £200 recently made to the library by Mrs. Bickersteth, widow of the late Mr. E. R. Bickersteth, a former president. The institution possesses a fine portrait in oils of Dr. Rutter by an unknown artist, probably painted more than eighty years ago. Until Mr. Bickerton undertook the researches which provided the material for the present address, researches on which he has been engaged for two years, practically nothing was known of his life and work except that he had taken an active part in the foundation of the institution, had been the largest subscriber to the building fund, had delivered an address at the opening of the building, and at his death had devised to the institution the most valuable collection of minerals in existence.

Practically no information with regard to Dr. Rutter was to be obtained from the records of the institution, and most of the facts of his life, so far as they have been ascertained, were brought to light by consulting the records kept by the Society of Friends, of which Dr. Rutter was a member. The family has thus been traced back to the year 1661, when there was born Thomas Rutter, who in 1691 married Rachel, daughter of Richard and Elizabeth Ashbrook, of Frodsham. He was by occupation a blacksmith. The family, being strongly Royalist, is believed to have suffered greatly during the civil war. From Thomas Rutter was descended John Rutter, who was born in Liverpool in 1762. His father's sister was married to William Rathbone, the ancestor of the present family of Rathbones, and one of the earliest opponents of the slave trade. John Rutter was apparently on very intimate terms with his uncle by marriage.

In his sixteenth year his stepfather presented him with *The Anatomy of the Human Body*, by James Keill, M.D.—satisfactory evidence that his intention to enter the medical profession was already fixed. At the age of 17 he was present at the meeting when the Liverpool Library was publicly inaugurated. About the year 1785 he went to Edinburgh, and was there three years. When 24 years of age he obtained the M.D. degree, and published his "thesis" (in Latin), on *Phthisis Pulmonalis arising from Tubercle*. He subsequently settled in Liverpool, and when about 27 years of age was elected President of the Liverpool Library, in succession to William Roscoe. He afterwards became one of the physicians to the dispensaries. He was one of the principal founders of the Liverpool Athenaeum, but his great claim to the gratitude of the medical profession is the part he took in the formation of the Medical Institution, at which he delivered the first inaugural address. He died in 1838. Though of a retiring disposition, his worth was universally recognized, and that his practice was not inconsiderable seemed to be proved by the fact that he left a fortune of nearly £30,000. He bequeathed his valuable collection of books to the Medical Institution.

A cordial vote of thanks to Mr. Bickerton, proposed by Sir James Barr, and seconded by Mr. Thelwall Thomas, was carried by acclamation. After the address the members were entertained at supper by the President.

Dublin Graduates' Annual Dinner.

The annual dinner of the graduates of the University of Dublin (Trinity College) resident in the North of England will be held this year in Liverpool, at the Adelphi Hotel, on Monday, October 18th. Sir Robert Ball, F.R.S., will preside, and the principal guest will be the Rev. J. P. Mahaffy, D.D., D.C.L. Dr. T. R. Bradshaw is the chairman of the local committee, and Dr. F. Strong Heaney and the Rev. H. D. Morgan, LL.B., are the local secretaries. Every endeavour has been made to communicate with the graduates in the neighbourhood, but it is possible that this may meet the eye of some medical graduates who have not received the intimation. Dr. Heaney's address is 35, Russell Street, Liverpool.

St. Luke's Day Service.

The annual service for medical practitioners will take place at St. Luke's Church on Sunday, October 24th. The preacher will be the Rev. Dr. Diggle, Bishop of Carlisle. Dr. Diggle is well known in Liverpool, and it is hoped that there will be a large attendance of members of the profession.

WALES.

Medical Inspection of School Children.

Dr. J. Howard Jones, M.O.H., Newport, in his first annual report on the medical inspection of school children in the borough, points out that accommodation is provided for 17,703 scholars in the schools, and during the year there was an average attendance of 13,238 (89.2 per cent.). There are 20 separate schools, with 48 departments—11 for girls, 10 for boys, 8 mixed departments, and 19 for infants. Out of 2,498 children examined, 610 had bad teeth, and 10 out of 100 children examined required special attention. Dealing with the height and weight of Newport children, the report gives a series of figures showing that all children examined in the Newport schools were below the standard for all England. Taking boys of 13, the Newport height is 4 ft. 7¼ in., and all England height 4 ft. 9 in.; Newport weight 78 lb., all England weight 82½ lb. Newport girls—height 4 ft. 7¾ in., that for England being 4 ft. 9¾ in.; weight, Newport girls, 80 lb., while all England girls' weight is 87 lb. Invitations to be present during the inspection were sent to the parents, but in comparatively few cases was advantage taken of these. Of 2,498 children inspected, it was found necessary to notify some defect in 801 cases (32 per cent.)—381 for bad teeth, 245 for disorders of nose and throat, 165 for defective vision, 37 for defects of the hearing apparatus, and 115 for other defects or disorders. A large number of these had secured attention at the hospital, from doctors and dentists, and from parents. Difficulty had been found in obtaining proper rooms for the examination, the fire and lighting of some of the teachers' rooms being inadequate. In some cases it was noticed that the desks were facing the light, the worst possible arrangement. In several cases the windows were so distinctly dirty that they diminished what light there was. The walls of the schools and the objects on them had, in some instances, collected a thick layer of dirt. There seemed to be too many objects about the room, all acting as dust collectors. The necessity for the training of all school teachers in the principles of school hygiene was brought home to him forcibly when visiting a class-room during a

singing lesson. After pointing out that the children were seated with arms folded, leaning on the desks whilst practising the scales, and that the desks were such that the children's feet dangled in mid-air, he remarks that a better distribution of the desks amongst the various classes would do away with such anomalies. It is further pointed out that the majority of parents cannot afford to pay the fees for special treatment of their children, and consequently many of those who are unable to procure attention at hospitals were not attended to. Dealing with ringworm, Dr. Howard Jones says that 205 cases were discovered among the children. This disease was a very chronic one, and consequently was responsible for serious interference with the educational progress of those affected with it. The loss in grant at Newport from ringworm alone during the year amounted approximately to £50. Referring to the assistance given him by the teachers, Dr. Jones says that, whilst the majority of the teachers realized the importance of the work and afforded every assistance, there is an impression among a certain minority that the work is entirely outside their sphere. On the question of the ventilation in schools, he says the atmosphere of Newport schools is not satisfactory, although in some schools it is worse than in others. A series of instructions are given on this point. The report also deals with the work of cleansing the schools. School prizes, it is suggested, should be awarded for good conduct and efficiency, and not for attendance. In the latter case the parents are so anxious that the coveted first-class prize (never absent, never late) should be obtained, that they sent children to school who, even on casual inspection, were seen to be ill enough to be in bed. It would be well for the committee to give consideration to the question of open-air schools. With regard to the provision of meals, the report says that there is a marked improvement in those children who have been provided with meals by the committee. Instruction in personal hygiene was, however, necessary.

THE BARRY HOSPITAL.

The Barry Accident Hospital was established in 1895 for the benefit of the workmen of the docks, who otherwise must have been conveyed to Cardiff, eight miles distant, or treated in their own homes. In 1900 it was taken over by the Barry Urban District Council, and has been enlarged to a general surgical hospital providing 22 beds. The district contains a population of about 33,000, almost entirely composed of the workmen of the Barry docks, their families, and the tradesmen, etc., necessary to supply their wants. The docks alone employ between 8,000 and 10,000 men. Originally it would appear that all the medical men resident in Barry were members of the staff of the hospital, and were entitled to treat patients there. With the extension of the hospital, questions have arisen with regard to the constitution of the staff. It would appear that it is not the desire of the general body of local practitioners that cases requiring serious operation should be treated in the hospital if the condition of the patient will permit of removal to Cardiff before operation, and further that serious operations of expediency should either be sent to Cardiff, or, if retained in Barry, should be operated upon by a surgeon in consulting practice in Cardiff, unless one of the local practitioners desires to specialize in surgery, in which case it was said to be desired that a special appointment should be created for the purpose. The matter was referred by the Cardiff Division to the Hospitals Committee, who instructed the Medical Secretary to visit Barry with the view of obtaining full information; the result of his inquiries is briefly stated above. The Hospitals Committee recommended that it should be open to each medical practitioner in the district who desired it, and who had been in practice there for six months, to go on the staff of the hospital in rotation, four acting at one time for a period of three months consecutively, each being on duty every fourth week during the period. It was further recommended that each member of the staff should be paid a fixed honorarium for each three months' term, £20 being suggested as a reasonable amount.

At a special meeting of the Barry Hospitals Committee early this month, the scheme founded upon the above recommendations which had been submitted by the local profession was considered, and it was stated on behalf of the doctors that while they would be willing to give their services free in the case of a voluntary hospital, they did not consider that they could do so in the case of a hospital entirely supported by the rates, as was the Barry Hospital. The Committee appear to have taken the view that if the doctors laid down the principle of payment it was the duty of the Council to appoint a medical staff; and it was finally decided to recommend the District Council to take this course, and to appoint a committee to consider whether the appointments could not be made in conjunction with the medical staff already in the employment of the Council. The Cardiff Division will, we have no doubt, take steps to ensure that the matter is adequately discussed when it comes before a full meeting of the District Council.

INSPECTION OF MEAT AT CARDIFF.

At the Cardiff Health Committee held on October 5th, Dr. E. Walford, M.O.H., presented a report upon the work of the officers of the Port Sanitary Authority appointed to assist him in the execution of the unsound food and foreign meat regulations. Up to June over 80,000 lb. of food, consisting of frozen rabbits, onions, tomatoes, rice, sugar, oranges, and grain, had been destroyed. From January 1st to May 31st the amount of foreign meat examined was 26,223 quarters of beef, 53,801 carcasses of mutton, 33,168 carcasses of lamb, and 13,105 cases and bags of offal, consisting of ox and sheep hearts, ox tails, etc., imported from River Plate and Melbourne. A member inquired if the staff was large enough to cope with the work, and Dr. Walford said the regulations had only been in force a little time, and if the work increased he would have to submit a further report to the Committee at a later stage.

MERTHYR HOUSING SCHEMES.

At a meeting of the Merthyr Health Committee on October 6th, Dr. Duncan, M.O.H., in his monthly report, stated that in the districts of Georgetown and Brecon Road there were between 90 and 100 houses unfit for human habitation, and in the large majority nothing short of entire rebuilding would render them satisfactory. It was resolved that the deputy surveyor inquire for suitable sites for the building of workmen's dwellings in various localities. A member stated that the only remedy was for the Council to build more houses, but it was pointed out that private enterprise had done more to provide houses during the last ten years than it had done during the previous fifty years. The Chairman remarked that there were 200 houses in course of erection in the northern portion of the borough, and he thought that the committee might show a little leniency until those houses were erected. The Inspector of Midwives reported that she found many cases of poverty during her visits to infants' homes, and in one case the suffering was exceptional. She was of opinion that a number of mothers lost their children through sheer want of nourishment, which undoubtedly added materially to the high death-rate now prevailing. Ten cases of typhoid fever had been admitted to the Mardy Isolation Hospital, 4 cases being admitted from one house; the origin of the disease was obscure; 43 cases of scarlet fever were admitted, the large majority being from Merthyr Vale. With regard to meat inspection, it was stated that warnings had to be given in regard to humane slaughtering, it being stated that pigs were struck in pens in the sight of other animals, and in another a large number of sheep were found tied on the floor of the slaughter-house, and were killed in the presence of other sheep and pigs inside.

India.

The Proposed Malaria Conference in Simla.

A Government of India communication has recently been published regarding the conference which was opened in Simla by the Governor-General on October 12th in connexion with a proposal now before the Government that "a permanent organization should be formed to inquire systematically into problems, both practical and scientific, connected with malaria in India." The number of deaths ascribed to "fevers" throughout India approximates to 4½ millions annually, and, although most of these are due to other causes than malaria, yet from the indications afforded by certain recent inquiries it has been estimated that a little over one million of these are probably due to malaria, which means a very much larger number of cases of sickness due to this disease. Although these authoritative figures fall far short of Professor Ross's statements, they are still terrible enough, and the Government recognizes that they call for their best efforts to diminish them. The letter goes on to point out that the conditions vary so widely in different parts of India that measures which may be most suitable in one would be quite impracticable or only a waste of money in another. For this reason it has been decided to hold a conference to frame a scheme for an organized attempt to deal with the malarial problem as a whole in consultation with administrative officers intimately acquainted with the local conditions in the various provinces. The Government of India has nominated the P.M.O. of His Majesty's Forces in India, the Director-General of the I.M.S., the Sanitary Commission with the Government of India, the Director and Assistant-Director of the Kasauli Institute, and the Statistical Officer to attend, while the local Governments have each been invited to depute an administrative and a medical officer, together with an Indian gentleman. The problems to be discussed are ranged under three groups: (1) The distribution of malaria in India and in each province in relation to the sickness and mortality it produces. (2) Measures of prevention which have been adopted in different provinces, such as drainage, mosquito destruction, and quinine distribution, and their success or otherwise. (3) Improvement in the schemes of prevention, including the best method of widely distributing quinine. Scientific papers dealing with some of these problems will be read.

It is sincerely to be hoped that something really practical will result from this long-delayed endeavour, as by this time there should be sufficient data accumulated by the different local administrations to allow of efficient measures being taken to lessen the death-rate from malaria in India. If the Government is sufficiently in earnest to provide liberal grants to put the necessary measures into force, it may rely on the medical department making the best use of the money provided. Hitherto medical officers have too often been expected to make bricks without straw.

Indian Sanitation.

The India Office presents to Parliament annually a Blue Book entitled "Report on Sanitary Measures in India." The latest, the forty-first of the series, is for the year 1907, and consists mainly of information condensed from Indian Sanitary Reports, especially the report of the Sanitary Commissioner with the Government of India, of which a full abstract is given. The sanitary events of 1907 have been already summarized in the British Medical Journal, 1909, vol. i, p. 1192, but this report contains, in addition, some information regarding hospitals and dispensaries, lunatic asylums, and medical colleges and schools. The number of Civil hospitals and dispensaries (State, public, local fund, and private-aided) in operation during the year was 2,542, in which 413,821 in-patients and 24,573,571 out-patients were treated, and 992,317 operations performed. All these figures are in advance of those of the preceding year. This does not represent the whole of charitable medical relief given in India. There are numerous missionary, Lady Dufferin, native, State, and private institutions in addition, which minister to the sufferings of the indigent. There are 23 lunatic asylums, in which were confined 5,630 male and 1,526 female patients. Criminal lunatics constituted nearly 37 per cent. of the asylum population. The discharges amounted to 10.2 per cent. and the deaths to 10.4 per cent. of the daily average strength.

The existing medical colleges of India are four in number (Bengal, Madras, Bombay, and Lahore), and a fifth is under construction at Lucknow. There are fifteen medical schools in which the standard of education is lower, and the examinations for licences less elaborate and exacting. There are in addition some private medical schools in the presidency towns in which useful if not very exalted instruction is given. Short notes are given regarding these institutions which indicate activity and progress. They supply the public and public services with qualified medical men. There is at Dehra Dun an *x*-ray institute in which instruction is given to civil and military medical officers and subordinates. The number of skiagraphic examinations made was 1,188. The transactions of research and Pasteur institutes are also summarized.

Infant Mortality in Bombay.

Dr. J. A. Turner, the Health Officer of Bombay, has, as his annual reports testify, paid special attention to the great mortality of infants and its prevention. He has recently published his facts and recommendations in pamphlet forms. He gives reasons for concluding that the registered births do not represent the whole of the children born of Bombay parents, and, after applying necessary corrections, estimates that the infant mortality amounts to 286 per 1,000 of the births, against 228 for the whole of India, and 145 for large English towns. "Debility" accounts for about one-third of the deaths, chest diseases come next, and convulsions, bowel complaints, small-pox, measles, fever, and prematurity follow in descending order. The number of stillbirths is very considerable. Dr. Turner considers that ignorance, neglect, exposure, and defective feeding are responsible for the large infant mortality, and urges that "the remedy appears to be more skilled attendance in confinement, more sanitary surroundings and facilities for obtaining medical aid and food for mother and child." His specific recommendations are: (1) The provision of lying-in hospitals, (2) the training and registration of native midwives, (3) the suppression of untaught and unskilled midwives, and (4) the establishment of municipal milk dépôts. It is satisfactory to note that practical measures have already been initiated. There are three lying-in hospitals in which 2,220 women were delivered in 1908, and nurses are trained; there are 10 district nurses attached to municipal dispensaries who attend poor women, 171 native "dhais," and 77 native midwives or sick nurses; but much additional effort is required in the same direction.

The Government of Bulgaria has decided to organize a systematic campaign against malaria, on the lines followed in Italy. It has already made large purchases of quinine for the purpose.

The third International Congress of Physiotherapy will be held in Paris at Eastertide, 1910 (March 30th and 31st and April 1st and 2nd). The Congress is under the patronage of M. Fallières, President of the French Republic, and the Minister of Foreign Affairs has expressed his willingness to be honorary vice-president. The members of the honorary committee are Professor Bouchard, the President of the Academy of Medicine; the Prefect of the Seine, the President of the Municipal Council, the Prefect of Police, the Dean of the Paris Faculty of Science, Professor Lépine of Lyons, and Dr. Oudin, President of the French Society of Electrotherapy. Among the members of the organizing committee are Professor Landouzy, Professor Gariel, Professor Robin, Professor Bergonié, Dr. Huchard, and Dr. Béclère. The work of the Congress will be distributed among seven sections.

Special Correspondence.

PARIS.

The French Surgical Congress: The President's Inaugural Address: The Care of Patients Before and After Abdominal Operations.—International Aviation Exhibition.

THE twenty-second annual French Congress of Surgery was opened on October 4th in the large amphitheatre of the Faculty of Medicine. M. Richelot, the President, chose Simple Surgery as the theme of his inaugural address. Simple surgery, he said, must be a surgery which was mature and highly cultivated. He had always looked with sadness on the multiplicity of instruments, of infinite variety of form, which professed to meet every possible want of the operator; for the most successful operator was the man who made the best use of his fingers and his good sense. The luxury of certain operating theatres was also to be condemned, for Lister had said and proved that asepsis was obtained by attention to the region affected, the instruments, and the hands of the surgeon. In the same way chloroform was better given on a simple handkerchief when the anaesthetist knew what he was about, than by one who placed his confidence in the taps of an apparatus. The motto of the surgeon should be "to act simply and go straight to the point." Surgery was encumbered with too many useless little things, and these useless complications all arose from an excessive desire for personal methods.

Among the reports presented to the congress was one by Professor Tuffier, of Paris, and de Rouville, of Montpellier, on the care of patients before and after abdominal operations. The main thought of the surgeon and all his efforts should, it was urged, be concentrated on the one object of bringing the patient back as nearly as possible to the physiological normal. A chapter of the report was devoted to the general measures for the prevention of infection. If the cause of death in a long series of operations was looked into, septicaemia would be found always to be present; and this had led to a large amount of research tending to diminish or suppress all risk of infection during the operation. To banish septicaemia it was necessary to render the subject refractory, to render the patient immune against surgical infection, as a rabbit was rendered immune to tetanus. It was first necessary to know all the microbes which caused septicaemia in man, then the corresponding serums or polyvalents could be injected as a preventive method. For the last twelve months Dr. Tuffier, with his collaborator, M. Mauté, had carried on research in this direction. The two problems were (1) to render the patient immune from any operative infection, and (2) to increase his resistance to such a degree as to render him almost refractory. For the first purpose, it was necessary first to have the serums which render immune from at least the commonest microbes (staphylococci, streptococci, and *coli* bacilli) which caused septicaemia. Vaccination against operative infection might be active, immunity being conferred by the injection of serum from an infected animal. Its action was immediate and reached its maximum in twenty-four hours; or passive, the immunity being consecutive to the injection of a small or attenuated dose of the infective agent itself. Its immunizing action was slower and the reactions more intense according to Wright's method. Dr. Tuffier had tried to render the subject immune to each variety of infection, but no polyvalent serum against all of them had been efficacious. Clinically the injection of antistaphylococcus vaccines prepared by Wright's method gave good results in pure staphylococcic infection, but not as a preventive injection before operation. There was no fact at present which proved that it was possible by a preventive injection to render an operation case immune. If the patient could not be rendered refractory to infection, could he at least be put into a state of greater resistance before the operation, so that infection might be prevented in an absolute or relative manner? Was it possible in man, before the operation, to provoke a leucocytosis sufficient to stop any infection? Attempts had been made to bring about (*a*) general leucoprophylaxis by subcutaneous or intravenous injections of leucogenic substances (nucleinic acid, thallianine, serum of the horse heated to 55° C.), or (*b*) local leucoprophylaxis, either before the operation, provoking in the peritoneal cavity a local leucocytosis which put it into a maximum state of defence at the time of the operation, or by leaving a solution in the peritoneal cavity at the time of the operation to obtain a similar result. Dr. Tuffier had treated these patients thus: leaving 10 c.cm. of sodium nucleinate in the peritoneal cavity, there were no evil results, and the three patients, after large gastric or intestinal resections for cancer, got well; these cases, however, were not numerous enough to warrant any conclusion. In summing up this chapter of his report, Dr. Tuffier said that it seemed evident that preventive revaccination against operative infection was the method of the future, but a future still distant and obscure. Its action was precise for a simple infection or a symbiosis of two elements, and with the perfected method of Wright should give good results; unfortunately, infection by a single species of microbe did not occur in abdominal surgery. In certain metastatic abscesses with pure staphylococci, or suppurations with pure culture of *Bacillus coli*, it would seem that after eliminating possibility of anaërobic microbes, preparatory vaccination were indicated, but such cases were very exceptional. Local leucoprophylaxis nine to twenty-four hours before the operation was in abdominal surgery very difficult to produce. Puncture was dangerous, and a double operation at a few hours' interval was a very great complication, the more so because, owing to the benign operation effects yielded by asepsis, this method could only be applied to particularly grave operations. General leucoprophylaxis as a preventive measure, by the use of sodium nucleinate or thallianine, had as yet not been fully tested. Its greatest advantage was that it was harmless; but from his experience Dr. Tuffier found that in grave conditions it missed its object, and that in mild infections it was not known whether the leucocytosis thus caused was of the same value as that determined by the infectious agent itself. Success depended not on the number but on the fighting strength of the polynuclear cells. Leucoprophylaxis provoked by the local introduction, immediately after the operation, of sodium nucleinate, of serum or collargol as an antiseptic, had not as yet been proved useful. The best guarantees for the recovery of the patient were to operate quickly, well, and aseptically, striving by all mechanical means to ensure preoperative and operative asepsis.

The First International Aviation Exhibition, which is now being held in the Grand Palais, besides every form of biplane and monoplane, contains much of interest to the medical man. There is a special physiological section where are exhibited a number of insects, birds, and flying animals, bats, etc., and a series of stuffed pigeons demonstrating the researches of Marey on the physiology of the flight of birds; tables showing the researches of Hallion and Tissot on the gases in the blood and the respiratory exchanges; the researches of Pierre Bonnier on the effects of altitude on hearing; the instruments used for research on the physiology of altitudes, and especially apparatus for measuring arterial tension. The Aero Club organizes monthly ascents for meteorological and physiological research; a large table shows the most remarkable of these ascents and the heights reached. On Sunday morning medical men were invited to an interesting visit to the exhibition under the guidance of an aviator and a physiologist, and a large number took advantage of the opportunity.

THE Paris Academy of Medicine has awarded a prize of £160 to M. W. Haffkine for his work on inoculation against cholera.

AT the meeting of the Metropolitan Asylums Board on Saturday, the Hospitals Committee reported that it had considered the question of whether there should be a time limit of service for assistant medical officers in the infectious hospitals of the board. The medical superintendents had been consulted on the subject. The committee had finally decided (1) that there should be a time limit of service for four years for junior assistant medical officers, and (2) that in the case of junior medical officers promoted to be senior assistant medical officers the limit of the total period of service should be ten years. The decision of the committee was confirmed by the board.

Correspondence.

FASTING PRISONERS AND COMPULSORY FEEDING.

Sir,—The position assumed by your correspondents on the feeding of the recalcitrant suffragettes, in their letters published in the last issue of the Journal, seems extraordinary. In substance it amounts to this:

1. That the duties of medical officers of prisons are, or should be, confined entirely to the treatment of sick prisoners.

2. That prisoners who wish to injure their health by refusing food are to be permitted to do so.

3. That the suffragettes are political prisoners, and therefore should be allowed to do much as they please.

As regards (1), the duties of medical officers of prisons are onerous and responsible and are conveyed to them in detail on appointment, and are by no means confined to the treatment of disease and injury. They have to inspect each prisoner on admission and discharge and frequently during their incarceration, arrange their diet, ascertain their peculiarities of mind and body, note their capabilities, and sanction any punishment ordered for breach of prison rules, etc. They have to make frequent sanitary inspections, and perform many other duties impossible to tabulate, and incidental to the care of a number of human beings deprived of their liberty.

2. If the suffragettes were permitted to injure their health and defy both the prison rules and the terms of their punishment as inflicted after conviction, and, it is presumed, a fair trial by the responsible officers of the law, why should other prisoners be denied similar liberty? If a prisoner was ordered a life sentence or any other imprisonment, he might defeat the ends of justice and starve himself, or he might take poison surreptitiously conveyed to him. Would the compulsory use of the stomach tube or some antidote not be fully justified under such circumstances? Again, a prisoner might sever an artery or a vein, or break his arm or leg, or inflict upon himself numerous injuries. Would the medical officer be justified in leaving him unattended to because he wished to destroy himself? Take another case—it often happens. Prisoners are admitted to gaol or the lock-up almost poisoned with alcohol. Is the stomach tube not to be used because they resist? In private practice do we not often meet with cases who refuse food and have to be fed? And if this is so, why should not the same method of treatment be carried out with female suffragettes who act foolishly in order to defy the authorities and escape the punishment the law considers their offence has deserved? In lunatic asylums it is well known numbers of patients have to be fed constantly against their wish. Why should these unhappy people have a method of treatment forced upon them which they object to? Why are Christian Scientists punished if injury or death is produced by their failure to call in proper medical or surgical assistance? Are persons who attempt to commit suicide sane or insane? Is not refusal to take food an effort to commit suicide? And if it is lawful to compulsorily feed lunatics and prevent suicide, how can it be contended logically that the suffragettes in prison should not be compulsorily fed? And, finally, if these premisses are conceded, who can carry out the necessary treatment except doctors or skilled nurses under their supervision?

3. If the medical officers of His Majesty's prisons considered it part of their duty to discriminate between prisoners, or permitted their sympathies to interfere with the impartial performance of their responsibilities, what a strange place a gaol would soon become. Does it require further argument to prove the hopeless position assumed by correspondents who boldly assert that one of their chief objections to forcible feeding of the suffragettes is largely based on sympathy with prisoners they consider not criminals. Is a woman, because she has a grievance and wants a vote, to be permitted to throw bombs, assault the police, create disturbance, endanger the public peace, chain herself to railings, etc., and does she not bring herself within the term criminal? In the case of a man who conducted himself in a similar fashion there would not be much room to doubt the verdict of the public. Why should there in the case of a woman?

In conclusion, I wish to say I do not agree with your strictures of the Home Secretary, who seems to me to have carried out his responsible duties with firmness and discretion. I am quite certain Mr. Gladstone has no desire in any way to shelter himself from public criticism, or to throw upon the medical officers of prisons duties which doubtless are extremely disagreeable, but none the less incidental to the position they occupy in the service of the State.—I am, etc.,

Edward Thompson, F.R.C.S.I.,
Surgeon, Tyrone County Hospital; ex-Medical Officer, Tyrone County Gaol.

Omagh, Oct. 11th.

Sir,—As an old prison medical officer, perhaps you will be good enough to allow me a few words on the above subject.

In the first place it must be understood that, from the admission of a prisoner until his discharge, the medical officer of the prison is responsible for his bodily and mental health. Neither the administrative staff of the prison, nor even the Home Secretary, can relieve him from this responsibility, which is statutory and personal to himself; consequently, those authorities cannot interfere with any treatment he may consider necessary. If a prisoner starve himself, then he alone is responsible for taking steps at the proper time to supply nourishment either by force or otherwise. If he fail to do so, and the prisoner die or become permanently injured in health, he rightly will have all the blame.

Forcible feeding is a purely medical question, for which the Home Secretary can have no personal responsibility. Were he foolish enough to assume responsibility, as you suggest in your article in this week's Journal, and issue orders as to the administration of the stomach tube, the position of the medical officer would be intolerable. He would then indeed become the tool of the Home Secretary, and might fitly be described as analogous to the "Whipping Warder, or common Executioner." Such a supposition is grotesque. The Home Secretary might as well order the medical officer to excise the tongues of the more voluble suffragettes, in order to keep them quiet, as instruct him to feed them with the stomach tube to enable him to punish them for their misdeeds.

The Home Secretary may, or may not, liberate, just as he sees fit, but, so long as a prisoner continues in prison, the responsibility for his health remains with the medical officer, and cannot be shifted on to other shoulders.

Of course, a medical officer could always recommend a prisoner's release on medical grounds, but it is questionable whether voluntary starvation would be considered a sufficient plea for such clemency.

I am in entire accord with your leader of October 2nd, but, in my opinion, you misunderstand the position of medical officers of prisons when you suggest that they should act, in their medical capacity, under orders from the Home Office.—I am, etc.,

John McNaughton, M.D., I.S.O.

Glasgow, Oct. 11th.

Sir,—"If the whole responsibility is to be thrown on him, he will find himself face to face with a divided duty—that which he owes to the patient, and that which he owes to his official superiors. The Home Office has no right to place him in this cruel dilemma." This sentence, which concludes your remarks in to-day's Journal on the "contemptible pusillanimity" of the Home Secretary in reference to his treatment of the officers of the prison service strikes one as the most potent argument yet advanced in favour of the women confined in Winson Green being allowed the benefit of an independent medical opinion. It is alleged that compulsory feeding is a mild form of "hospital treatment" undertaken solely for the benefit of the patient.

If this be true, where is the "divided duty"? If untrue, what words can describe the conduct of a Liberal Government that calls on the medical men in its employment to carry out this treatment as a method of coercing political opponents?

I do not speak of expediency; the position of the unfortunate medical officer is obvious, but I emphatically protest against the expression "divided duty" in reference to the professional relations of patient and medical

attendant. The latter is appointed to attend to the sick and suffering, and for that only.

With reference to the suggestion that the women demand different treatment to men prisoners on the score of sex, let me point out what has been repeated time and time again, that it is precisely this difference of treatment that is objected to.

Jameson raiders and Irish cattle-drivers are put in the first division. The acts of violence they commit are excused so far by reason of the political motive underlying them. Why not these women? Do even those most averse to their methods venture to allege that they would break windows or throw slates at the police except as part of a definite political protest?

They have every whit as much right to treatment as political prisoners as the men whose cases are cited, yet the services of the profession are requisitioned to compel them to acknowledge themselves as common criminals.—I am, etc.,

London, S.E., Oct. 9th. H. Gordon Clark, M.D.

Sir,—I see that in the current issue of the British Medical Journal there are several letters in which the authors take exception to your remarks of the previous week on this subject. May I (and I think in so doing I am at one with the vast majority of level-headed medical men—certainly with every one to whom I have spoken on the point) thoroughly endorse every word of your article?

For your correspondents to attempt to describe the imprisoned suffragists, convicted of dangerous acts of violence, as political prisoners is only another instance of how judgement can be warped by bias. What next? Stones and slates are weapons not so far removed, after all, from knives and pistols.

Even one in so eminent a position as Mr. Mansell Moullin appears to think that the compulsory feeding was a special act of vindictiveness on the part of the Government, and that the suffragists are being treated "in a way that men never are." Surely he must know that self-starvation is an old prison trick, and that it would be far more common were not its futility in view of compulsory feeding pretty widely known amongst prisoners. It must be obvious that to forbid the nasal tube would simply be to empty our prisons, at any rate of those with long sentences. I imagine that Mr. Mansell Moullin does not view that with equanimity. But possibly he considers that the suffragist, whatever she may do, is to receive special treatment accorded to no other. If this be so, I must confess that he has done something to weaken an argument which I have always held to be one of the chief against women's suffrage—namely, that in the average woman the sense of judgement is subordinate to the emotions (for example, intense desire on the part of a woman to attain some object for herself, or, more commonly, for others, often completely overbalances her sense of justice). But Mr. Mansell Moullin is a man!—I am, etc.,

Reading, Oct. 10th. W. Bernard Secretan.

Sir,—We must hasten to revise our ideas as to our professional duty. It seems that, if, in a particular case, the ideal method of treatment is impracticable, the next best method should not be tried, and to employ it, if it is unpleasant, painful, or attended with the slightest danger to life, is utterly unjustifiable, even though the life or subsequent health of our patient is in imminent danger. Such, at any rate, is the only conclusion we and the general public can draw from the expression of expert opinion promulgated in the House of Commons by a very eminent surgeon and 116 other medical men, and in various lay papers, and even in your own correspondence columns by other members of the profession.

A prison medical officer is called upon to deal with certain patients suffering from acute starvation. The ideal method of treatment, in this particular case, is obviously liberation or transference to another division. He finds that owing to circumstances over which he has no control this is impracticable; he may order their release, but he knows that his orders will not be carried out. In this dilemma, holding rather antiquated notions as to his professional duty, he decides to do the next best thing, and feeds them. Thereupon his action is publicly condemned, not merely by an irresponsible public, but responsible members of his own profession, and his treatment is pronounced unjustifiable on the ground that it was unpleasant, or even painful, and that it was not entirely devoid of danger to life and health. On the very same grounds these gentlemen, if they are consistent, would condemn the man who attempted to reduce a strangulated hernia by taxis when attendant circumstances rendered the ideal method, operation and radical cure, impracticable; for in some cases a radical operation, if practicable, is certainly the ideal treatment, and taxis, besides being sometimes difficult and painful, is not free from dangers of its own. The rest of the profession and the general public would hardly endorse their view in the hernia case, and if they do so in the starvation cases, it will not be from professional or ethical considerations. From a professional point of view the two cases are parallel; both are in imminent danger of death or seriously impaired health if treatment is delayed; in both ideal treatment is impracticable, and in both the next best method of treatment will almost certainly tide them over the danger, and in both the second best method is attended by certain drawbacks and dangers. One, however, is an ordinary patient, and to his case ordinary professional and ethical principles are applicable, but the others are "political" prisoners, and new principles must be discovered for their case. Why? Do political prisoners bear charmed lives? Can they certainly bear starvation without detriment until the political wind changes, or can their medical attendant tell exactly how soon the wind will change, and base his treatment on his meteorological expertness? Or is the political prisoner to be regarded by the medical profession as outside the pale of humanity?

It is all very puzzling. One has often been told that our profession ought to play its part in social and political progress, and I have taken some little interest in political questions in the past, but am afraid I must now cease to do so, lest my professional judgement become warped, or, what would be even worse, lest I some day find that I have, consciously or unconsciously, exploited my professional knowledge for the furtherance of some political animus.—I am, etc.,

Swinton, Oct. 10th. J. Price Williams.

Sir,—It appears to me a most lamentable thing that people of such standing as Mr. Mansell Moullin, Dr. Edkins and Dr. Louisa Garrett Anderson, should associate themselves with the hysterical outcry about "horrible outrages" on the Birmingham suffragettes. When the prisoners at Holloway began to escape what appeared to be the legal punishment by starving themselves, the first question that occurred to most medical men was, "Why not feed them with the tube?" It seemed reasonable to suppose that prisoners would not be allowed to render their trial and sentence a mere farce by "hunger-striking" tricks. I was astounded, therefore, when I read in the *Times* a violent letter by Mr. Mansell Moullin on the revolting nature of what is usually considered a simple every-day procedure. I thought of the hospital days, when we washed out people who had partaken of too much alcohol; of the people with dilated stomachs who are taught to wash themselves out; of the test meals and examinations of stomach contents. It took my breath away to learn that such proceedings are "revolting" and "horrible outrages," or that they differ so much from washing out the bladder and exploring ureters. And now you publish three letters dragging all sorts of red herrings across the trail. These red herrings are so numerous and obvious that it is hardly necessary to mention them. But surely Dr. Edkins has a very limited notion of the duties of the prison medical officer, who has to be present even at the administration of the "cat" to healthy prisoners; while Dr. Garrett Anderson's paragraph about the stomach tube not being employed to save life but as a means of coercion is a pure assumption, and full of bias at that.

Surely, there are only two questions of any importance: First, what is the right way to deal with a prisoner who is wilfully damaging her health by starvation; and secondly, Is there anything unusual in the curative method adopted with these patients? It seems incomprehensible that any medical man—or woman—

can answer these questions, except in one way. In none of the letters in your issue of last week is any alternative treatment indicated. Dr. Garrett Anderson, it is true, suggests that if the prisoners were treated as first-class misdemeanants, they would not starve themselves. But surely this is only another of the red herrings. These women have no more right to expect "hunger-striking" to be allowed because they disapprove of their position in prison than the passive resister has to expect that his goods will not be sold when he refuses to pay his rates.—I am, etc.,

London, W., Oct. 11th. CHAS. BUTTAR.

SIR,—Assuming that the suffragettes are as legally in prison as was the Indian who, "*fighting for a political idea*," atrociously murdered a distinguished Indian official, what should be the proper line of treatment for a prisoner who refuses food? Is the prisoner to be set at liberty? in which case all our prisons may be at once pulled down, as it will be open to each and every prisoner by refusing food to escape all penalties of the law; or shall they be allowed to commit suicide? in which case the responsible prison officials will be guilty of a criminal act. The third alternative is compulsory feeding, and even if there were risk in that operation, it would be as justifiable under the circumstances as it would be to use some violence and a boathook to pull a would-be suicide out of the Thames.—I am, etc.,

Lee-on-Solent, Oct. 10th. DONALD SMALLPEICE.

CLUB PRACTICE AND THE POOR LAW REPORTS.

SIR,—The leading article in the JOURNAL of October 9th contains one sentence to which I wish, with your permission, to draw the attention of the members of the medical profession. It is: "Whatever may be said by some of the friendly societies, club practice must be regarded as a form of medical charity."

The idea embodied in the above sentence contains, to my mind, the root of the evil from which we now suffer, not only in regard to club practice but also in regard to the Poor Law medical service. It may please medical men to think that they are dispensing a form of charity when attending club patients; but every club patient—aye, all without exception, one may venture to say—regard the service rendered by the doctor as properly and suitably paid for. The working men co-operate to secure the services of a doctor at a reasonable price, and they would disdain the notion that they receive charitable aid because they cannot afford to pay. Individually they may not be in a position to pay, but collectively they are, and, indeed, would wish to pay the doctor a proper salary.

Whatever our opinion may be, the workmen hold the position in their own hands, and rightly so, for they, by means of co-operation, can and will pay. Wherever the doctor is not adequately paid, proper representation should be made to the workmen, and that in a businesslike spirit, so that the difficulties in any situation may be faced, and a statement obtained as to what is the actual amount the doctor can and will do the work for. The question of charity should be left severely alone, knowing full well, as we all do, that many opportunities to dispense charity will arise in the course of practice.

Can we not settle once and for all that work done, and remuneration for it, shall be placed on a business footing, capable of adjustment as time goes on and as circumstances and conditions change?

If we could obtain such an understanding among the members of the profession we should gain, it seems to me, the first and most important step towards settling the club question. Moreover, we should obtain an understanding which will be invaluable to the doctors as well as to the public when the matter of outdoor medical relief in connexion with the Poor Law shall be reconsidered by the State.

I hope that the above will suffice to make medical men think upon the situation the profession finds itself in to-day, and realize there is a danger lest we be treated by the public in much the same way as by Parliament.—I am, etc.,

Cambridge, Oct. 9th. JOSEPH GRIFFITHS.

SUPERANNUATION OF POOR-LAW OFFICERS.

SIR,—In his address to the Relieving Officers' Association, Dr. Major Greenwood (SUPPLEMENT, October 9th, p. 253) is reported to have stated that the only compensation for superannuation that could be claimed after ten years' service and in the case of forced retirement would be ten-sixtieths, and so on, of his salary as a permanent pension. Under Sec. 8 of the 1896 Poor-Law Officers Superannuation Act, it states that an officer who has not become entitled to superannuation allowance, and who loses his office by reason of a reduction of staff, etc., *shall* be entitled to receive a sum equal to the amount of all his contribution to any such fund under this Act, and the guardians *may* also, *if they see fit*, and with the sanction of the Local Government Board, grant a gratuity not exceeding twice the amount of his salary and emolument during the previous year. It would therefore appear that all he could *claim* would be the return of his contributions, and under no circumstances get more than twice his last year's salary and emoluments. This would be decidedly worse than what Dr. Greenwood stated would be the case, and what he appeared to think a poor return for the loss of appointments; and, in view of future, and possibly near, alterations in the Poor-Law Service, it is desirable we should know exactly how we are likely to stand. Section 8, as it stands, appears to me decidedly unjust, more especially to those amongst us who have spent many years in the service of the Local Government Board. Perhaps Dr. Greenwood will explain?—I am, etc.,

Fulbourn, Oct. 9th. F. L. NICHOLLS.

CLINICAL TEACHING.

SIR,—The reference in "Progressive's" letter (September 18th) to the clinical study of the out-patient is very important. Like most of the men of my time, I attended a clinical lecture once a week more interesting than the systematic lecture, inasmuch as it referred to one case or a group of cases considered only as to diagnosis and treatment. We went round the wards with the physician almost daily, and studied some cases more closely as clinical clerk in charge of two or three beds. But all these were serious cases; many appeared subsequently in the *post-mortem* theatre. The training was most important and valuable, but it was too ponderous. The earliest patients one sees in practice are not bedridden at all, nor deadly, nor even obscure. Yet the very thoroughness impressed upon us as all-essential tended to confuse when we met with a trifling illness—trifling medically, not so to the sufferer. A complete and careful diagnosis is not appreciated by the common or everyday patient, who likes a doctor to tell him the matter before he has told him his complaint. I was locumtenent to a provincial doctor who was said sometimes to settle what was the patient's illness while on the way to the house, and at least on one occasion made his diagnosis to fit in to his preconceived opinion—quite erroneously. Something between these extremes should be taught. Show to the student how with a brief inspection he can distinguish between a patient complaining of illness, in whose case elaborate or detailed examination of the different systems, family history, is required, and so forth, and the case of a patient who may be summarily dismissed with a simple prescription such as mag. sulph. or inf. quass. As a question of bread and butter this is really of importance, and is perhaps the chief virtue of the old apprenticeship. The methods of Harley Street are all right in their place; but we do not all live there, or near there in club practice. If I mistake not, the out-patient clinic, where it exists, is limited to a percentage of the numbers that actually attend—that is, it is an extension of ward teaching.

Is it not worth while to consider those crowds of trivial ailments? Is a bottle of medicine everything? A former junior resident told me that he usually saw from 100 to 120 out-patients every day, and that after a week or two's experience he got this work over in about three hours. One who a year or two ago had been assistant to a doctor who had many clubs, told me that he frequently saw 130 patients a day, including, of course, his visiting list. Both of these are capable men, and I think I may believe their statements. Is this sort of thing necessary in the interest of the young medical man? Nay, is it not injurious, as

tending to induce a superficial and careless habit of treatment? The strain to a too conscientious mind must be ultimately injurious. Then what opportunity has the resident—in London at all events—for study for higher professional honours?

As to examinations. In the final the clinical should be counted separately from the written part. That is, a man who passes well in the written, and is not quite successful in the other, should *not* have the worry of another written examination, but should come up again after two or three months' study of concrete illness only. The examinee should not be needlessly harassed. I have been told that a certain body of examiners hold their clinical examinations in the evening between 6 and 10 o'clock, and that the candidates are delayed in town many days awaiting their alphabetical order. This, if true, would be rather brutal, for the student and examiner alike are more or less fagged at the close of the day. The former has already a weight of anxiety hindering him that the other has not, therefore give him an open field and a fair chance of showing his best in the race.—Yours faithfully,

September 28th. NOT A CONSULTANT.

SIR,—I should like to narrate three incidents that occurred in the wards of my clinical teachers when I was a student—not so very long ago.

The first teacher—a man well known, who taught clinical medicine for a long period of years—used to show the methods of "going about" a case by means of demonstrations twice weekly on three cases each day which lay in the beds of his wards. Each case was wheeled in bed into the circle of students, who sat around on benches.

On one occasion the teacher in question began: "This, gentlemen, is a very interesting case which came into the ward two days ago. The man is a smith, 45 years of age, and in his early days he had a sore on his penis—a hard chancre." Then, turning to the patient, and momentarily consulting his notes, "You had a sore on your penis when you were 22 years old, my man?" "No, sir," from the patient, who looked surprised. "Oh, yes, you had; you told us so when you came in here. He is evidently a little upset by the presence of all you gentlemen, and does not like to admit the fact. Now, a year after that you suffered from sore throat, a rash appeared on your skin, and some of your hair fell out?" "No, sir," from the patient, with greater emphasis, and with a look of bewilderment. "Oh, yes, you did suffer from these things" (again consulting his notes), "you must tell the truth here my man. You may take it from me, gentlemen, that this patient suffered from these secondaries, and now I wish to bring before your notice a condition of which he complains most severely; that is, headache, which is always worse at night, and ——" Just then the ward sister came forward and whispered audibly, "You have the wrong bed, sir; this should have been the *second* case!" Physician collapsed into a chair speechless, looking first fiery red and then ghastly pale.

On the second occasion the patient was a girl. "This girl, gentlemen, is 18 years of age, and, as you see, she looks pale and emaciated. She suffers from all the classical symptoms of gastric ulcer. She has pain immediately after the ingestion of food; vomiting, sometimes after the lapse of an interval; haematemesis, or vomiting of blood; anaemia very marked, etc., etc. But there is one other symptom or sign I should like to bring prominently before your notice to-day, and that is tenderness at the level of the tenth dorsal vertebra. Sit up, my girl." He then pressed gently on the spot mentioned. "Does that hurt you, my girl?" "No, sir." Applies greater pressure. "That hurt you?" "No, sir." Now gives her a hefty punch on the back; patient cries out, evidently suffering acute pain; teacher looks highly pleased, and, turning round with an air of great satisfaction, remarks, "You see, gentlemen, it is as I said; there is tenderness at the level of the tenth dorsal vertebra!" Why did the students grin?

The third incident occurred in another teacher's wards. The patient, a man, lay in bed, the students stood around. One fellow was buttonholed by the teacher, who suddenly pulled back the bedclothes and just as suddenly replaced them; then, turning to the student, said, "What is the matter with this man?" "I don't know, sir," was the reply. He was quietly pushed out of the way, and No. 2 student was buttonholed, and the performance repeated. A similar reply was obtained to the query. And so it went on until eight or nine men answered alike negatively. Then did our worthy teacher give us, one and all, a "dressing down" for "not being able to use the faculties and senses that we possessed, nor to reason in a proper fashion. The veriest tiro should have at once perceived on the withdrawal of the bedclothes that there arose a smell of stale urine. The man was, therefore, passing his urine involuntarily in bed, and in private practice we should have been able to diagnose at the front door that the patient we were about to see suffered from paraplegia!"

These are examples, Sir, of "clinical" medicine as she is sometimes taught! Comment is unnecessary; but let coming generations get better stuff than that.—I am, etc.,

October 9th. ANTI-ROT.

LONDON AND PROVINCIAL UNIVERSITIES.

SIR,—In the JOURNAL of October 9th I note, in an address by Mr. F. C. Wallis and also in an editorial on the subject of "The University and the Medical Schools of London," two statements: (1) "At any other teaching school outside this metropolis a student could obtain a doctor's degree for the same amount of time and money that it took a London student to get the double qualification, which, although an excellent one, did not carry the all-important one of 'Doctor'"; and (2) "The whole trouble lay with the Matriculation Examination."

These statements cannot both be correct, and I think it is easy to prove that neither is.

When entering for an entrance examination five years ago, I asked the advice of an experienced teacher which of two examinations to take—the London Matriculation or that of the Conjoint Boards of Liverpool, Manchester, Sheffield, and Leeds, and his reply was that there was nothing in it, and the toss of a coin decided me for the Conjoint Matriculation.

That his advice was sound is shown by the fact that the London University now accepts this matriculation instead of their own for entrance to all their degrees, showing that they also consider them equal.

If equal, therefore, the second statement falls to the ground, for it is well known that the number of students entering for the degrees of these four colleges is steadily increasing, and that they are attracting a better class of student; if unequal, then there is a back door through the "antiquated barbed-wire fence," which the provincial schools are trying to copy.

It follows, then, that if statement (2) is correct, statement (1) cannot be, for the entrance examinations for the provincial and London schools are equal in stiffness, and "they are the cause of the trouble," but it is perfectly well known to any one in contact with the students reading for the double qualification (diploma) of London that they may be roughly divided into two classes: (*a*) Those reading for a degree of their university—Oxford, Cambridge, London, or provincial—who wish to get on the *Register* within the shortest space of time and take their own degree later; and (*b*) those students who neglect to try for and fail to take either the Matriculation Examination of a university or one of the professional examinations, and to whom the colleges hold extended arms, giving them credit for any examination or portions of examinations passed in their university. To insinuate that there is no difference between the standards of the professional examinations is as ridiculous as it would be to say "that all the entrance examinations were equal."

As one who was deterred from entering the metropolitan medical schools, I think I can point the reason why they are not flourishing. They are: That the provincial schools are offering superior attractions in the way of more individual teaching and interest being taken in the student, and the greater practical experience he is allowed.

In the hospital wards he has more beds and has more opportunity of using his hands than in the larger schools, and he has an equal opportunity with his London brother in the standard of the class teaching he receives.—I am, etc.,

October 9th. A PROVINCIAL STUDENT.

THE GASTROSCOPE AND ITS USES.

Sir,—Dr. Hill in the British Medical Journal of October 9th points out what he calls the pioneer gastroscopic inventions of Mikulicz in 1881 and those of Rosenheim in 1895, but I should like to know if Drs. Thompson and Souttar have taken notice of the work accomplished by David Campbell, surgeon, in this connexion. He practised his profession in Glasgow, and died in March, 1848. He was a man of great originality, and one of the founders of the Southern Medical Society in this city. I venture to quote the following interesting and amusing extract from the history of the Southern Medical Society, which was written by the late Dr. John Dougall in the year 1888:

Dr. Campbell had an obvious mechanical turn of mind, as besides having shown the brethren Dr. Warden's prismatic speculum (presumably uterine) and which was then considered (1844) "likely to prove a very useful instrument," he some time after invented a gastroscope, but no one of the brethren would allow his stomach to be examined by it.

It happened, however, that "the shows" were then at the foot of Saltmarket, it being Glasgow Fair, and amongst the various wonderful feats there performed was the swallowing of a sword without injury by one of the performers.

Dr. Campbell, hearing of this, naturally concluded that when the man could swallow a sharp, rigid, flat sword, he would have no difficulty in getting him to swallow his smooth, flexible, round gastroscope. Accordingly he called at the sword-swallower's booth and, producing his gastroscope, tackled him by explaining its intended use, and requesting liberty to experiment on him with it. The showman looked askance at the gastroscope and shook his head in a mild negative way. Dr. Campbell urged that from the construction of his instrument the experiment was perfectly devoid of doing the least injury, and said further that if one could swallow a sword without danger, he could surely swallow Dr. Campbell's comparatively harmless instrument. But the showman was inflexible, and put a damper on Dr. Campbell's ardent hopes about the future of his gastroscope by abruptly exclaiming, "I know I can swallow a sword, but I'll be ——— if I can swallow a trumpet."

Any comment on this quotation is quite unnecessary—it speaks for itself.

"Honour to whom honour is due."—I am, etc.,

Glasgow, Oct. 12th. Thomas Richmond.

Sir,—As Dr. William Hill mentions my name in his letter in the Journal of October 9th, will you allow me to say that in writing he has done a service to the profession in Great Britain and particularly to Dr. Souttar and Dr. Theodore Thompson, for his letter has been replied to by Dr. Souttar in a note which will make it clear to our foreign colleagues that previous work in the same field has been fully studied and appreciated.

As the examination of the stomach is rather outside my province, I do not propose to discuss the relative merits of the direct and the indirect methods of gastroscopy. The special value of the direct method as practised with the Killian and the Jackson type of instrument are undoubted, for the surgeon is enabled both to secure his diagnosis and apply local remedies by means of forceps and swabs respectively. Dr. Souttar and Dr. Thompson in face of great difficulties have produced an instrument which gives in a short space of time a complete view of the entire organ in a distended condition, and on this achievement they are to be highly congratulated.

The next step is to ensure the confidence of the profession in the safety of the manipulations. There is fortunately a widespread and growing distrust with respect to the blind passage of instruments down the oesophagus. Fatal cases have come into the experience of almost every surgeon with whom I have discussed the question, and those who in any extensive measure have made a practice of oesophagoscopy will be prepared to assert that many times they have examined cases in which the safety or peril of blind bougieing, even in the most delicate hands, must have been determined by pure chance. I refer to cases in which new growth has assumed a cauliflower form with a central lumen, cases of deep syphilitic ulceration, and cases of sharp impacted foreign body. It is true that a few fatal accidents have occurred in oesophagoscopy, but they have been such accidents as must occur in all surgical procedures, and have taken place in spite of precaution and careful consideration, and in no sense from the lack of them.

The conditions will be entirely other, should a fatal accident occur with the new gastroscope, without the preliminary inspection of the gullet. Such an accident will in all probability occur in hands other than those of the inventors of the instrument; but the moral onus will rest with them, and a valuable method may easily fall into permanent discredit through the lack of a small preliminary manœuvre which would occupy only thirty seconds. Under a general anaesthesia, oesophagoscopy with the ordinary straight instruments is an exceedingly simple matter, the details of which can be acquired from any recent textbook. I can recall but one single instance, that of a very old gentleman with a stiff, bent backbone, in which any serious difficulty has occurred in inspecting either the lower end of the oesophagus or else some diseased condition at a higher level; nor have I met with any but a momentary check in passing the instrument into the stomach where the oesophagus has been healthy. The chief difficulty and danger has always concerned the upper molar teeth, and these cannot be classed as serious. My object in writing is to urge Dr. Souttar and Dr. Thompson to prefix to their description of gastroscopy the instruction that the oesophagus should first be submitted to direct inspection. This will relieve them of a heavy moral onus, and at the same time secure for their instrument a fair trial at the hands of the profession.

I have a hope also that this practice will lead their admirable faculties of invention and determination to construct a straight instrument which will serve for direct examination and manipulation, as well as for indirect inspection of the distended organ.—I am, etc.,

London, W., Oct. 10th. E. B. Waggett.

THE ROYAL SOCIETY AND THE TESTS FOR COLOUR BLINDNESS.

Sir,—The Board of Trade has recently issued its report for last year on the sight tests used in the mercantile marine. There are two points in this report to which I desire to draw attention. The first is that of the 13 men who failed with the wool test and were re-examined on appeal, 7 passed and 6 were rejected—that is to say, over 53 per cent. passed. The Committee of the Royal Society on Colour Vision said in its Report, page 17, with reference to the old Board of Trade tests: "Cases have been brought before the Committee's notice where a candidate who has failed at first has passed in a subsequent examination. If the test for colour blindness were fair to the candidate, and perfectly efficient, such a re-examination would be unnecessary, and passing upon re-examination would be impossible." The old Board of Trade tests did not reject this enormous percentage of normal sighted persons.

The second point is that two additional test skeins, a yellow and a purple, have been added. This will not increase the efficiency of the test, especially as the examiners are not medical men, and have no real knowledge of the subject. The only result of these additions will be that more normal sighted men will be rejected, as well as many more of those who have slight and unimportant defects of colour perception. The special varieties of colour blindness which passed this test in its previous state will be able to pass it now, and these include many of the most dangerous varieties of colour blindness.

All that I asked in the past was an opportunity of demonstrating my facts; all that I ask now is that there should be a fair inquiry into the subject, and that men who have been specially trained for a certain profession, namely, that of the Mercantile Marine, should not lose their employment unjustly, and when they are in every way fitted to carry it on.—I am, etc.,

Hendon, Oct. 9th. F. W. Edridge-Green.

THE QUACK MEDICINE TRAFFIC.

Sir,—I noticed in the excellent article on The Quack Medicine Traffic, by Mr. J. C. McWalter, which appeared in the Journal, September 18th, 1909, p. 793, two slight errors. In speaking of the attitude of the Government toward proprietary remedies, Mr. McWalter says: " . . . in the United States, although there exists a tax upon proprietary articles, it is enacted that the composition of all must be set forth upon the label." The facts are that there is no tax upon proprietary or "patent" medicines in this country except in the case of those so-called tonics that contain so small an amount of drugs compared with

their alcoholic content, as to make them subject to the internal revenue tax on alcoholic liquids.

Neither is it true that the composition of all proprietary remedies must be set forth on the label. Under the Food and Drugs Act that was passed in June, 1906, and came into effect January 1st, 1907, medicines are considered misbranded

if the package fails to bear a statement on the label of the quantity or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha eucain, beta eucain, chloroform, cannabis indica, chloral hydrate, or acetanilid, or any derivative or preparation or any such substances contained therein.

It will be seen by this that there are still a number of potent drugs that can be put into patent medicines, and their presence not be indicated.—I am, etc.,

Chicago, Oct. 2nd. ARTHUR J. CRAMP.

BLACK SPOTS ON CHILLED BEEF.

SIR,—In the JOURNAL of September 25th appears a short notice regarding Professor Klein's report on the Nature of Black Spots on Chilled Beef, in which he claims to have established the etiology of these spots. In the *Journal of Comparative Pathology and Therapeutics* issued in December, 1906, appear the results of my investigation into the nature of Dark Spots on Frozen Carcasses.

It is true that Professor Klein was working on *chilled* beef, but of his illustrations, Figs. 2, 3, and 4, showing sections of the black spots, give exactly the appearances of sections of spots which I got from *frozen* carcasses—namely, closely segmented mycelial threads, the segments being in length from once to twice the breadth. These segmented threads were invariably pigmented, but the pigment appeared to me to be brown, not green.

Professor Klein states (p. 12 of his report) that the fungus causing the black spots does not belong to the Mucorini, and on this point I differ from him. From my own observations, I claim that the mycelium shown in the above-mentioned figures in his report has been reproduced experimentally by pure cultures of the Mucorinus termed *Thamnidium chaetocladioides*.—I am, etc.,

Edinburgh, Sept. 29th. JAMES HENDERSON, M.R.C.V.S.

COURT-MARTIAL ON A FLEET SURGEON.

SIR,—As "An Average Fleet Surgeon" has mentioned my name, may I be allowed to reply?

I have the greatest respect for the naval medical officer *individually*, but for the Naval Medical Service, *as an organization*, none. This is not the fault of naval medical officers themselves. Their present position is an anachronism. To merely state that my remarks are "untrue" is easy; it would be more difficult to prove them so. There must be considerable indignation among the ranks of naval medical officers over this most unjust court-martial, and it is a significant fact, which carries its own commentary, that the only two letters from among them have been written in support of the naval authorities. No one dare do otherwise.

This is not the time to waste your valuable space in airing my views on the whole question, and I will conclude by asking "An Average Fleet Surgeon" to accept from me a full apology for any imagined discourtesy towards himself and his colleagues. I hope I shall live to see the conditions under which he and they work made easier and more self-respecting. Meanwhile, intending candidates would be well advised to leave the Naval Medical Service severely alone.—I am, etc,

Sevenoaks, Oct. 9th. GERALD SICHEL.

THE North London Medical and Chirurgical Society initiated its nineteenth session on October 9th by holding a *conversazione* in the board room of the Great Northern Central Hospital. The guests were received by the president of the society, Dr. James Crabb, and an excellent programme of music had been arranged by Mr. L. H. Glenton Kerr, the secretary of the hospital, to whom the society is greatly indebted for his valuable help in many directions. The present honorary secretaries of the society are Drs. T. J. T. McHattie and E. H. Shaw.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

Appointments.

THE following appointments have been made:—

Demonstrator of Comparative Anatomy: F. A. Potts, M.A., Trin. Hall.

Demonstrator of Animal Morphology: L. A. Borradaile, M.A., Selwyn Hostel.

Senior Demonstrator of Botany: F. T. Brooks, M.A., Emm. Coll.

Junior Demonstrator of Botany: D. Thoday, M.A., Trin. Coll.

Demonstrator of Chemistry: F. W. Dootson, M.A., Trin. Hall.

Vacancies.

The Professorship of Zoology and Comparative Anatomy is vacant by the resignation of Professor Sedgwick. The election will be on Friday, October 29th. Names should be sent to the Vice-Chancellor before October 22nd. The Quick Professorship of Biology is vacant, the three years for which Professor Nuttall was appointed having expired. The election will take place on Friday, October 29th. Applications should be made to the Vice-Chancellor before October 22nd.

Examinations.

The following candidates for the diploma in Tropical Medicine and Hygiene have been approved:

P. H. Bahr, Trin., C. S. Bowle-Evans, Emm., J. C. Kennedy, J. L. Lunham, H. Macfarlane.

UNIVERSITY OF GLASGOW.

THE following candidates have been approved at the examination indicated:

FIRST M.B., CH.B. (B., Botany; Z., Zoology; P., Physics; C., Chemistry):—R. Armstrong (B., P.), G. F. Barr (B., P.), A. D. Blakely (P.), A. Blashky (B.), W. E. Boyd (B., P.), R. W. Brander (B., P.), W. A. Brechin (B., P.), D. P. Brown (B., P.), W. H. Brown (B., P.), A. G. Buchanan (Z.), W. E. A. Buchanan (B., P.), J. W. Burton (C.), J. Campbell (B., P.), W. L. Cassells (Z.), B. Cohen (B., P.), W. M. Conley, M.A. (B., P.), G. G. Cooper (B., Z.), T. M. Crawford (B., P.), N. Crichlow (B., P.), L. Crombie (B., Z., P.), G. D. de Kock (Z., C.), W. Donald (P.), T. I. Dun (P.), T. Ferguson (B., P.), J. B. Fotheringham (Z.), J. Fraser (P.), I. Grant (B., P.), R. M. Greig (B., P.), W. J. Henry (B., P.), G. Hislop (B., P.), W. Hornsby (B., P.), T. C. Houston (Z.), J. F. Hutton, M.A. (B., Z., C.), D. Johnston (B., P.), J. F. Lang, M.A. (B.), A. Lindsay (P.), C. J. van Lingen (Z., P.), R. Lyon (Z.), D. M'Alpine (Z., P.), D. S. M'Bean (B., P.), J. L. M'Bean (B., P.), J. F. M'Creath (P.), H. D. M'Crossan (C.), J. W. M'Donald (B., P.), J. B. M'Dougall (B., P.), J. M'Ghie (C.); J. MacInnes (B., P.), C. R. M'Intosh (B., P.), R. H. M'Killop (C.), D. Mackinnon (B., Z., P., C.), J. R. C. Mackintosh (B., P.), K. N. MacLean (B., Z., P.), R. M'Lean (B., P.), N. Macleod (P.), F. W. M'Millan (B., P.), R. M'Minn (Z., P.), A. P. Martin (P., C.), W. Martin (B.), W. J. May (B., P.), W. Meikle (B., P.), A. U. Millar, M.A. (B., P.), A. D. Moffatt (B., P.), W. M. H. Muir (P.), T. M. Newton (B., P.), T. A. O'Brien (B., P.), W. O'Brien (B.), W. L. Peacock (B., P.), J. S. Prentice (B., P.), A. M. Ramsay (C.), A. Rankine (Z., C.), D. R. E. Roberts (B., P.), A. L. Robertson (C.), D. B. Robertson (B., P.), R. C. Robertson (B., P.), S. Robertson (B., P.), S. Robertson (B., P.), S. D. Robertson (B., C.), G. W. Ronaldson (Z.), D. A. Ross (B.), A. W. Russell (B., Z., P., C.), A. Scott (B., P.), J. Sillars (Z., C.), J. R. Sinclair (B., P.), T. R. Sinclair (C.), J. K. Smith (B., P.), R. Stewart (B., P.), G. Taylor (Z.), R. Tennent (B., P.), C. R. T. Thompson (B., P.), R. M. Thomson (B.), J. Walker (B.), R. B. Wallace (Z., C.), W. S. Wallace (P.), H. C. Watson (B.), J. A. White (C.), J. Whiteside (Z., C.), C. A. Whittingham (B., P.), J. B. Williamson (B., P.), R. H. Williamson (B., P.), A. S. Wilson (B., C.), T. W. Wylie (B., P.), J. M. Young (Z., C.).

Women Students.—N. M. A. Allan (B., P.), C. S. T. Anderson (B., P.), G. G. T. Anderson (B., P.), M. J. Brown (B., P.), E. Crawford (C.), M. P. Hislop (C.), M. A. Kirk (P., C.), A. E. M'Kail (B., P.), M. H. M'Killop (C.), M. Thompson (B., P.), S. A. Watson (B., P.), M. Wilson (B., P.), J. A. Woods (B., Z.).

SECOND M.B., CH.B. (A., Anatomy; P., Physiology; M., Materia Medica and Therapeutics):—M. J. Aitken (A., M.), J. B. Alexander (A.), J. C. H. Allan (A., P., M.), J. W. Anderson (A.), A. J. Archibald (A.), C. Averill (M.), A. M. Blackwood (M.), S. H. Bloom (P., M.), J. Bower (A.), D. S. Brough (A., M.), J. T. Brown (M.), R. A. Brown (M.), W. M. Buchanan (A.), G. Cochrane, M.A. (A.), R. C. Corbett (A.), A. M. Dunlop (A.), W. E. Elliot (P.), P. Figdor (P.), J. Findlay, M.A. (A.), P. Findlay (P.), H. Forrest (A.), A. Fraser (A.), L. L. Fyfe, (A.), A. R. H. Geyer (P.), J. Gibson (M.), C. W. F. Greenhill (M.), A. S. Hannay (A.), A. G. Henderson (A., P., M.), J. Hendry, M.A. (M.), A. G. Holms (A.), W. H. Howat (A.), F. A. Kerr (A., P.), T. J. Kirk (A.), A. Kirkhope (M.), N. V. Lothian (A., P.), N. M'Farlane (A.), J. D. Mackinnon (A.), A. M'Leod (A.), M. H. MacLeod (A., P.), W. W. MacNaught (M.), S. A. MacPhee (A.), G. H. M'Robert (A., P., M.), O. H. Mavor (P., M.), S. S. Meighan (M.), A. Muir (P.), A. A. Murison (P.), A. Neilson (M.), H. Paterson (A.), H. C. D. Rankin (A., M.), H. Y. Riddell (A.), J. G. M. Robertson (M.), J. L. Scott (P.), W. L. Scott (A.), W. Sneddon (A.), R. A. Steven (A.), J. A. Stewart (P.), L. T. Stewart (A.), E. N. Thomson (A.), W. Tudhope (A.), A. G. Waddell (A., P., M.), A. G. S. Wallace (M.), H. F. Watson, L.R.C.P. (A.), E. C. White (A.), T. Whitelaw (A., P.), A. Wilson (P.), D. Wilson (M.).

Women Students.—I. Inglis (A., M.), K. S. Macphail (M.), L. M. Ross (A., P.), C. H. Shearer, (A., M.), I. J. Stark (P.).

THIRD M.B., CH.B. (P., Pathology; M., Medical Jurisprudence and Public Health):—T. Adam, M.A., M.R.C.S. (P., M.), J. A. Aitken (P., M.), R. R. Archibald, M.A., B.Sc., (P., M.), J. B. Baird, B.Sc., (M.), C. S. Black, (P., M.), J. E. Black, (P., M.), A. H. Brown, (P.), J. A. S. Burges (M.), D. Downie (P.), P. Drummond (M.), W. D. Dunlop (P.), T. S. Fleming (P., M.), J. Graham (P.), J. R. Haldane (M.), W. Hamilton (M.), A. Macaulay (P., M.), J. G. Mackenzie (M.)

T. J. Mackie (M.), M. Mackinnon (M.), A. T. M'Whirter (M.), F. W. Martin (M.). R. S. Miller (M.), C. Nicholson, M.A. (P., M.), A. S. Richmond (P., M.), J. I. Russell (M.), A. H. Sinclair (M.), J. D. S. Sinclair (M.), J. T. W. Stewart (P.), J. N. M. Sutherland (P., M.), W. O. Taylor (M.), J. L. Ure (M.), W. S. Waterhouse (P., M.), J. Williamson (Holytown) (M.), G. J. Wilson (M.), J. Young (P., M.).

Women Students: M. Alexander, M.A. (P., M.), M A. A. Beard (P.), L. E. Dodge (P.), M. A. Pilliet (M.), J. Wallace (M.), M. A. Wylie, M.A. (M.).

The following passed with distinction in one or more subjects indicated:

First Examination:—R. H. Williamson, Marguerite Wilson, J. B. M'Dougall, J. R. C. Mackintosh, T. M. Newton, S. Robertson, S. Robertson, M. Thompson, Sarah A. Watson, J. B. Williamson. In Chemistry—J. Sillars.

Third Examination.—T. J. Mackie, J. L. Ure.

UNIVERSITY OF ST. ANDREWS.

The newly elected Professor of Chemistry in St. Andrews University, Dr. Irvine, delivered his introductory lecture on October 8th. He reviewed the developments of the past hundred years, and compared the present position in chemistry with that of the early days of the nineteenth century. Chemistry, he stated, no longer occupied a lowly position, attached more or less by courtesy to other subjects. It was infinitely larger, more useful, more mature, more dignified. Its connexion with the kindred sciences reminded us of its old-time associations, but the relative positions had vastly changed. It clung to natural philosophy, but it was in the form of physical chemistry; the old attachment to medicine still survived, but the physiologist, the therapeutist, and even the pathologist had learnt to look to chemistry as one of the most potent factors in the future development of their own subjects. In a different sphere, in technical work of all descriptions, chemistry had found innumerable applications. Old industries had been improved and new industries devised by the chemist. Looking from the past to the future, it was difficult to predict the line of further progress. All that one could say with confidence was that progress would undoubtedly be made. Professor Irvine concluded his lecture by pointing out that a magnificent opportunity had been placed at the disposal of St. Andrews students by Professor Turdie, who had built and equipped the Research Institute.

ROYAL UNIVERSITY OF IRELAND.

The following candidates have been approved at the examinations indicated:

First M.B., Ch.B.—H. Alcock, C. Bannigan, W. W. Blair, Maud S. Budd, *P. Cagney, E. P. Carey, *D. M. Clements, W. Deeley, *J. J. Dowdall, *F. W. Doyle, B.A., J. Doyle, Sch., O. J. R. Forde, E. T. Freeman, W. F. Hare, H. M. Jackson, *T. Kennedy, *M. B. King, Marie R. Lynch, W. McElroy, H. McGlaughlin, Mary C. McKenna, B.A., *E. U. MacWilliam, *E. A. M. Magennis, *J. Moonan, W. A. Murphy, *G. P. O'Donnell, H. T. O'Neill, *S. E. Picken, J. E. Power, *R. L. Rea, *A. K. Roche, D. A. Sellars, E. Tempany, *Catherine J. Timony.

Second M.B., Ch.B.—†J. H. Beverland, †G. H. Mahony, †T. Marron, G. R. Naylor, †P. J. Walsh, S. Acheson, J. P. Aiken, T. Black, D. I. Cannon, F. L. Cleland, T. F. Colfer, C. Costello, D. J. Enright, E. H. Fennessy, L. D. I. Graham, J. E. Harford, R. Hennessy, J. R. Henry, J. V. Holmes, W. J. Hunter, B.A., F. Jefferson, J. T. Kyle, C. Lafferty, J. McFadden, E. McSorley, W. M. Morris, H. V. O'Shea, J. F. Rahilly, W. N. Rishworth, J. M. Sheridan, T. Smyth, B.A., S. P. Stoker, H. V. Walsh, S. E. Watson.

Third M.B., Ch.B.—†F. Crooks, †J. O. Hodnett, †J. C. Johnson, B.A., †R. J. McConnell, †H. I. V. Mullane, †O. J. O. O'Hamlon, M. I. Cogen, R. C. Cummins, T. P. Davy, G. Fitzgerald, D. J. Foley, H. H. C. Lynch, J. Lyons, T. J. R. Maguire, W. M. Millar, A. J. Moren, Mary A. Murphy, W. O'Brien, J. A. O'Flynn, Eileen M. O'Keeffe, J. C. Osburne, J. Patrick, J. Prendiville, W. N. Rishworth, T. G. Rothwell, W. J. Smyth, F. J. D. Twigg, P. W. White, W. Wilson.

* Qualified to sit for honours in one or more subjects.
† Upper pass and qualified to sit for honours.

UNIVERSITY OF WALES.

University College of South Wales and Monmouthshire.

A meeting of the Council was held on October 6th for the first time at the new college in Cathays Park.

It was resolved to perpetuate the memory of the late Mr. Ivor James, the first registrar of the college, but the form of the memorial was not decided upon.

A letter was read from the Cardiff Infirmary stating that the Board of Management had unanimously resolved that the Council of the University College be asked to accept the use of the rooms in the pathological department of the infirmary for its professor of pathology whenever he may be appointed. The Council resolved to place on record its most grateful appreciation of this generous offer by the Cardiff Infirmary.

A letter was read from the Clerk of the Drapers' Company to the effect that the company had resolved to renew for another period of five years its annual gift of £350 towards the department of engineering.

The Council approved of the historical sketch of the college submitted by the Registrar.

The resignation of Dr. E. J. Evatt as Lecturer of Applied Anatomy and Demonstrator and Assistant Lecturer in Anatomy was accepted with regret.

The Welsh inscription to be placed on the new building was approved, as follows: "Gosodwyd sylfaen yr adeilad hwn ar y 28fed o Fehefin, 1905, gan ei Uchelder Brenhinol, Sior, Tywysog Cymru, Canghellor Prifysgol Cymru. Agorwyd adran y Celfau ar y 14ydd o Hydref, 1909."

ROYAL COLLEGE OF SURGEONS IN IRELAND.

Dr. A. Campbell Geddes, Assistant Professor of Anatomy, Royal College of Surgeons in Ireland, has been elected Professor of Anatomy in room of the late Professor Fraser. Professor Geddes was formerly assistant to the late Professor D. J. Cunningham in the University of Edinburgh.

CONJOINT BOARD IN SCOTLAND.

The following candidates have been approved for the requisite examinations of the Diploma in Public Health:

A. B. Darling, R. L. Bolton, C. C. Murison, J. Jean Marr, F. W. Greaves, J. B. Miller, D. P. Blair, R. B. Davidson, and J. Allan.

APOTHECARIES' HALL OF IRELAND.

Appointments.

The following have been appointed Examiners for the ensuing year:—*In Surgery:* Professor Conway Dwyer and Sir Thomas Myles. *In Medicine:* Drs. J. M. Day and J. O'Donnell. *In Midwifery:* Dr. R. H. Fleming and Mr. R. J. White. *In Ophthalmology:* Drs. E. Magennis and R. J. Montgomery. *In Pathology:* Mr. J. L. Keegan and Dr. R. J. Rowlette. *In Medical Jurisprudence:* Dr. J. C. M'Walter and Mr. W. Fottrell. *In Hygiene:* Sir Charles Cameron and Mr. H. F. Powell. *In Materia Medica:* Messrs. J. D. Crinion and Seymour Stritch. *In Pharmacy:* Drs. F. G. Adye-Curran and E. F. Hanrahan. *In Physiology and Biology:* Professor D. J. Coffey and Drs. W. O. Kelly and J. Knott. *In Anatomy:* Professor E. P. M'Loughlin and Mr. P. J. Fagan. *In Chemistry:* Professor H. Ryan and Mr. J. J. O'Sullivan. *In Physics:* Professor H. Ryan and Mr. Bourke Kennedy.

SOCIETY OF APOTHECARIES OF LONDON.

The following candidates have been approved in the subjects indicated:

Anatomy.—J. M. Coplans, M. J. McEnery, O. W. D. Steel, W. G. Tickell, W. H. Vincent, C. G. Waddington.
Physiology.—P. Dvorkovitz, J. P. Jones, M. J. McEnery, O. W. D. Steel, C. G. Waddington.

Medico-Legal.

COMPULSORY FEEDING OF PRISONERS.

In view of the question of the responsibility of medical officers to prisoners who refuse to take food, we think it well to publish the following report (taken from the *Times* of October 13th) of proceedings taken in the High Court of Justice before the Lord Chief Justice of England, Mr. Justice Darling, and Mr. Justice Bucknill on October 12th, when Mr. George Elliott, K.C., applied for a rule *nisi* for a *mandamus* to the stipendiary magistrate of Birmingham to issue summonses for assault on behalf of Miss Laura Ainsworth against Mr. Herbert Gladstone, M.P. (Home Secretary), Captain Percy Green, (Governor of H.M. Prison, Winson Green, Birmingham, and Dr. Ernest H. Helby (medical officer of the prison). Counsel stated that on September 17th, when the Prime Minister addressed a public meeting at Birmingham, the applicant was guilty of obstruction. She was charged before the stipendiary on September 18th and remanded till the 22nd, and on the final hearing on that day was convicted and fined 10s. and costs or in the alternative fourteen days' imprisonment. In default of payment she was committed to gaol at Winson Green within the jurisdiction of the Birmingham stipendiary. Her affidavit was as follows:

"On Saturday, September 25th, while a prisoner in H.M. Prison, Winson Green, Birmingham, I was assaulted by Ernest Haslar Helby the medical officer attached to that prison, acting personally and by order of his superiors in authority. About 12 noon of that day I was taken into the doctor's room there. There was a sheet on the floor and an armchair on it. There were present the matron, a number of wardresses, and Dr. Helby and another doctor. Dr. Helby asked me to sit down in the chair, which I did. He had a blue paper in his hand and said, 'I have orders that you are not to be released—I have to do everything in my power to force you to take food.' He said, I am going to commit a technical assault on you,' and he took hold of my shoulder and said, 'I am going to take entire responsibility for my actions.' I was then seized by the wardresses and my legs and arms held. My head was forced back, my mouth forced open by Dr. Helby, and the spout of a feeding-cup forced through my teeth. I was in this position about a quarter of an hour. About 6 on the same day in the afternoon Dr. Helby and the other doctor and the wardresses came into my cell. The former tried to feed me in the same way. He then got a tube of rubber. I was in bed and being propped up and held by the wardresses. Dr. Helby tried to force the tube up each nostril in turn but failed, as my nose had been previously injured. Dr. Helby said, "Its no use." My mouth was forced open at the sides and a tube inserted and pushed down my throat a foot

or more. I was gagged by a cork with a hole, through which the tube went. Liquid was poured down through a funnel at the outer end, the tongue was pressed down and the tube forced down the gullet. The sensation caused a horrible choking and a stunned feeling. When the gag was taken out and the tube withdrawn, it seemed as if my inside was being pulled out, mucus and phlegm came up with it. I spit up a lot of phlegm afterwards. There was a terrible ache in my throat and chest. On Sunday, September 26th, the same operation took place twice, in the morning and evening. In the morning my mouth was prised open with a steel instrument and the tube inserted and forced down my throat as before. On Monday, 27th, and Tuesday, September 28th, food was forced on me by Dr. Helby by forcing open my mouth at the side and pouring some liquid food or meat extract into my mouth by means of a spoon. On Tuesday morning, September 28th, I was very sick in consequence of the forced feeding and the previous manner of it. On this day I was removed into the infirmary, where my condition was very weak. On Monday, October 4th, while still in the infirmary, Dr. Helby forced some meat juice down my throat by the gap in my teeth, holding my nose and throat by force to make me swallow; it was very painful, and made my throat ache; this was done three times on this day. On Tuesday morning, early, October 5th, I was released on the expiration of my sentence. On the previous evening the other doctor asked me if I had a sore throat. I said, Yes, caused by the india-rubber tube. This is about two yards long and about half an inch in diameter. In consequence of the treatment in the tube being forced down my throat I am suffering from congestion and inflammation in the throat and am feeling very weak and ill. I have lost over 13 lb. in weight. I am now being taken care of in a nursing home."

There was also an affidavit by Ernest Dormer Kirby, M.D.Edin., M.R.C.S., and it was as follows:

"I have examined Miss Laura Ainsworth this day, the 5th October, 1909, at 73, Harborne Road, Edgbaston. She is suffering from pharyngitis, or congested and inflamed throat. She is also weak and pale and suffering from nervous prostration. There is an apparent marked alteration in her voice, which is weak and husky. She complains of being very tired, and too tired to talk much. Her vitality is distinctly lowered, aad she complains of having lost weight. The operation of forcing a tube down the throat for the purpose of introducing liquid food is one which is attended with grave risk, especially if the patient resists. If the food is diverted down the wrong channel there is a liability of septic pneumonia supervening. The congested state of the throat is the result, I should say, of the forced passage of the tube down the throat."

The learned stipendiary magistrate expressed his determination as follows:

"I cannot see my way to grant these summonses because it seems to me that the acts which have been done were done in the process of law and do not amount to an unlawful assault. If I am wrong you will have an opportunity of reviewing my decision; I think that is the most satisfactory course to take."

The Lord Chief Justice: Whatever may be said about the doctor, I do not see what ground there is for issuing a summons against the Home Secretary.

Mr. Elliott: I rely on Section 5 of the Prisons Act, 1877, which vests the entire control of the prisons in the Home Secretary.

The Lord Chief Justice: What is there to show, assuming there has been an assault, that the Home Secretary is in any way responsible?

Mr. Elliott: It is a case of *respondeat superior*.

The Lord Chief Justice: This is a criminal act according to your case.

Mr. Elliott said that the applicant was unable to know what were the instructions on which the medical officer acted. The medical officer could only act under the governor. Counsel did not suggest that there was any evidence that the Home Secretary directed this treatment or was personally cognizant of what was going to be done. No act of disobedience would entail the punishment inflicted. He drew a distinction between the adoption of a particular course of treatment with the Home Secretary's authority and the carrying out what might be a lawful order in an excessive way. Counsel then read from the prison regulations dated April 21st, 1899, and said that under the words "in any other way offends against good order and discipline" it might be suggested that if the lady was ordered by the governor to take food and failed to do so, she might bring herself under the authority of the governor so as to give him a right to inflict some kind of treatment.

Mr. Justice Darling: I have not gathered that she was ordered to take her dinner by way of punishment.

Mr. Elliott then referred to the prison regulation that a medical officer was not to perform a serious operation on his own responsibility alone except in a case of emergency.

Mr. Justice Darling: You do not contend that this was a serious operation.

Mr. Elliott said that the principle was that it was the duty of the medical officer when he found that the imprisonment itself was a source of danger to the prisoner, to take the steps prescribed by the rules.

Mr. Justice Darling referred to the rule that the medical officer is to have the general care of the health of the prisoners.

Mr. Elliott said that that referred to a case where the mere carrying out of the punishment was having an effect never intended by the sentence. The offence of the applicant did not involve any treatment of the kind prescribed. It was not open to the medical officer to inflict upon a prisoner so painful an operation without her consent.

The Lord Chief Justice: Are they to let her die?

Mr. Elliott: What I say is that there is a remedy by letting her go. (Laughter.)

The Lord Chief Justice: That is monstrous. Take the case of a dangerous criminal who thinks he can get his release by declining to eat.

Mr. Elliott: These are questions of degree.

Mr. Justice Darling: If she says that she is going to starve herself to death, is there any law which obliges them to keep her alive?

Mr. Elliott said that he should say not.

Mr. Justice Bucknill: That is too funny. (Laughter.) An assault is laying hands on another in such circumstances as make it unlawful. Suppose this lady had tried to hang herself and the gaoler had saved her life against her will.

Mr. Elliott said that there was a distinction between an active attempt at suicide and the passive condition of this lady. In this case more force was used than was necessary.

Mr. Justice Bucknill: If you can say that more force was used than was necessary, you are right.

Mr. Elliott said that that was his whole contention before the stipendiary. The lady did not not complain of a spoonful of food being put in her mouth, but of the forcing of the tube into it by violence, and of putting a gag into her mouth.

The Lord Chief Justice, in giving judgement, said that as regards the Home Secretary there was not the slightest ground for the application. Mr. Elliott only based that part of the case on the ground that the prisons were vested in the Home Secretary. But to suggest that a summons might be issued against the Home Secretary because a medical officer had exceeded his jurisdiction, if he had exceeded it, was going too far. As regards the medical officer, the position was somewhat different. It was very important in the interests of those who could not always speak for themselves that prison treatment should be properly safeguarded, and he had no doubt that it was. It would probably be established to the court that they had not got the whole story. It was important that the court should have the whole story, and therefore they thought that there should be a rule *nisi* as to the summons against the medical officer. They granted it in order that the whole of the facts might be before the court. With regard to the governor, they thought that in all probability he was in the same position as the Home Secretary; but as particular discipline might involve his action, and as the medical officer was under the authority of the governor, they thought it better that the rule *nisi* should include the case of the governor. They did not express the slightest opinion on the merits. They only granted the rule *nisi* because they thought it important that there should be a full inquiry by the court.

DEATH UNDER ANAESTHESIA.

A CORONER'S inquest was held in Westminster on October 9th on the body of an officer in the Indian Army, aged 40, who died under anaesthesia at King Edward VII's Hospital, Grosvenor Gardens. The anaesthetic used was chloroform, and it was administered by a specialist. Respiration ceased three minutes after the commencement of the administration of the anaesthetic and when only 30 minims of chloroform had been given, and death took place in spite of artificial respiration and the administration of strychnine. On *post-mortem* examination the heart was found to be in a condition of fatty degeneration. The operation in view was one for the rectification of a displaced septum nasi. The deceased was carefully examined before operation and nothing abnormal found. He had informed the house-surgeon that, being engaged on very arduous duties, he was habitually overhauled medically every six months, and had always been passed as sound. A verdict of accidental death was returned.

THE HYGIENIC INSTITUTE.

AT Consett County Court, on October 6th, a man who stated that he was in the employ of the Hygienic Institute, was defendant in an action for damages in respect of alleged negligence in the administration of an anaesthetic and in the extraction of certain teeth. According to a report in the *Newcastle Chronicle* the evidence for the plaintiff was to the effect that the defendant, who had stated to him that he was qualified, undertook to extract painlessly eight teeth; he extracted two and broke all the rest. During the extraction he injected a local anaesthetic. The operation lasted an hour; the net result being that the plaintiff became ill, and on his recovery had to get the stumps extracted elsewhere. It was admitted by the defence that the defendant was an unregistered practitioner, but it was urged that the anaesthetic employed was one constantly used by qualified dentists, and that as the plaintiff was going about his ordinary duties three weeks after the operation it must have been skilfully performed. The judge, in summing up, commented strongly on the fact that the defendant, who was a comparatively uneducated person, set himself up as a dentist, though he had but little knowledge of the business, and was ignorant of the anaesthetics he used. The damages claimed, £31 8s., were far too small; if the action had been tried in a higher court, the plaintiff would have been awarded damages running into three figures instead of two. He then entered judgement for the plaintiff for the full amount claimed and costs.

Accounts of three other successful actions (at Coatbridge, Grimsby, and Bishop Auckland respectively) against the Hygienic Institute which have come under our notice within the past year will be found in our issues for April 3rd, page 876, and for April 10th, page 932. According to *Truth's* Cautionary List, this undertaking is one of the businesses of a Jew of Roumanian origin named Oscar Farkasch, and has offices at Glasgow, Newcastle, and Hull.

MEDICAL MEN AND PUBLIC COMPANIES.

F. W. T.—There may be difference of opinion on the question of professional ethics, but on the principle that Caesar's wife should not be suspected, we advise our correspondent not to accept the invitation to become a director of a company carrying on the business of wholesale druggists.

PAYMENT OF LOCUMTENENT.

Disgusted.—The locumtenent was entitled to leave his employer's house at the expiration of the time for which he was engaged, but he was not entitled to pay himself out of cash received. The charge that he has failed to account for other money is a very serious one, and if our correspondent desires to take further steps he should consult his solicitor.

PROFESSIONAL INFORMATION TO CORONERS.

Dr. Herbert P. Taylor (Bradford-on-Avon) writes: In November, 1902, I had a similar experience to your correspondent, "W. F. L. D.," being named in a telegraphic order from the coroner to inspect the body of a 5-months fetus, which had been exhumed from a garden by the local police. On my report that it was not the body of a viable child, the coroner wrote and thanked me for my report, and regretted that he had no fund to pay me a fee, as no inquest was held. I therefore sent a demand for £1 1s. to the police, who had summoned me to do the work. The Clerk of the Peace (who is also Clerk to the County Council) wrote repudiating liability. I privately laid the matter before the Chairman of the County Council, and wrote an official letter to the clerk, pointing out that I had been officially ordered by the coroner to undertake a disagreeable duty, that by my report I had saved the county the cost of an inquest, and that I had only charged the fee I was entitled to for making a *post-mortem* examination. I further pointed out that I was not compelled to make any report to the coroner until I had received a subpoena, and if I were not paid my fee I should know how in future to protect myself from being exploited. The matter was referred to the Finance Committee of the County Council, and after a time I received a letter from the coroner saying that he had been authorized to pay my fee, and enclosing a cheque for the amount. I would suggest that your correspondent, "W. F. L. D.," should adopt a similar course.

Medico-Ethical.

The advice given in this column for the assistance of members is based on medico-ethical principles generally recognized by the profession, but must not be taken as representing direct findings of the Central Ethical Committee.

OBLIGATIONS OF A SUBSTITUTE.

Enquirers write: A. and B. practise in the same city. C. and his family are regular patients of A. C. comes to B. and says that his son has been taken ill, and as he knows that A. is going away the next day and leaving a locumtenent in charge he wishes B. to attend the case from the beginning, which B. agrees to do "for A." C. tells A. that he has asked B. to attend his son, and A. writes and thanks B. for attending the case "for him." Before A. returns the attendance is terminated. What is the correct position in regard to the account for the attendance? In whose debt is C?

*** If C. pays B., B. must hand over half the fees to A. It does not much matter whether C. pays A. or B., but an equal division of the fees should be made.

Public Health AND POOR LAW MEDICAL SERVICES.

MEDICAL FEES.

At the meeting of the Aberystwyth Board of Guardians on October 11th, Mr. Edwin Morris, vice-chairman, who presided, said he took exception to a bill for £1 2s. 6d. sent in by Dr. Bonsall for examination of nine imbeciles. He found one woman included in the list whom the guardians had tried to get into the house, and they had sent Dr. Rees to examine her. Dr. Rees had reported that he could not satisfy himself that this woman was either a lunatic or an imbecile. He thought the board ought to look into the question, and, if possible, save the fee of 10s. paid yearly for the quarterly examination.

Mr. B. E. Morgan pointed out that there was a great difference between a lunatic and an imbecile.

The Clerk said there was.

Mr. Morgan: My contention is that Dr. Bonsall has not been asked to certify her as a lunatic.

Dr. Bonsall: I have not.

The Clerk read the letter of Dr. Rees, who said he had failed to detect any palpable symptoms of lunacy. She was eccentric, and subject to fits of violent temper. There were neither delusions nor hallucinations. In his opinion she was of weak intellect, and he would describe her as on the borderland of insanity.

The Vice-Chairman said the House Committee had been doubtful for a considerable time of several names upon the list, and this was one of them.

Subsequently the guardians passed the account for payment.

The clerk produced a bill for £1 1s. sent to Dr. Bonsall by Dr. Bassett Jones on account of assistance rendered in administering chloroform to a patient in the house. It appears that some time ago the board passed a resolution only to pay 10s. 6d. for such assistance, and the House Committee recommended the payment of 10s. 6d.

Dr. Bonsall asked what would be his position in the event of not being able to get a medical man to assist. He alone would not take the responsibility of administering chloroform, and he did not know any medical man who would come in for less than a guinea.

Mr. W. Thomas said that the Local Government Board had been consulted some time ago, and they said the medical officer was responsible for all cases, and he would be responsible for any assistance called in.

Dr. Bonsall: I say it is unreasonable to pay me 15s. for house maternity cases, and expect me to pay a guinea out of my own pocket.

The Vice-Chairman: You signed the contract.

Dr. Bonsall: It was my fault that I did not get inserted that extra pay should be made for extra assistance.

The guardians declined to pay more than 10s. 6d.

OXIDE OF IRON IN WATER.

Dr. W. Herbert Cooper (Pendeen, Cornwall) writes in reply to "H. R.": No doubt the water in "H. R.'s" well contains carbonic acid and humous acids, which are produced by the decomposition of vegetation. These acids will dissolve out iron from the walls of the cistern, and this iron in solution will at once become oxidized and precipitated as a red oxide.

CONTRIBUTIONS TOWARDS SUPERANNUATION.

C. M. writes that he held an appointment for seven years as a non-resident district medical officer, and that during the whole of that time there was a quarterly deduction from his salary towards superannuation. He was discharged from office without reason assigned, and had no voice in the matter. He asks whether he can recover the total amount deducted from his salary while he held office.

*** We are ready to assume that our correspondent has not quite correctly stated his own case, and that he has not been *discharged* as he states. It is more probable that he ceased to hold office in consequence of his being a non-resident, and, therefore, subject to periodical re-election when his previous term of office expired. If this was the case, and he was not re-elected to the office then vacant, we can only come to the conclusion that he is entitled by the first part of Sec. 8 of the Superannuation Act to claim a return of all his contributions paid by deductions from salary towards superannuation.

The annual dinner of the Continental Anglo-American Medical Society was held on October 9th in Paris, Sir Malcolm Morris, K.C.V.O., being in the chair. Among the guests were Professors Robin, Segond, and Chauffard. The chairman, in his toast to "The Society," laid stress on the fact that the presence of English and American doctors in a health resort brought to it an undeniable increase of prosperity. Moreover, they protected their countrymen from falling into undesirable hands, directing them to "the shrines of scientific truth, among which none in the world are more famous than those in the great city of Paris." Hence the utility of the society in bringing to the notice of physicians in the United Kingdom and in America responsible men to whom they could with confidence entrust their patients. Professor Robin, in an eloquent speech, referred to the practical value of Anglo-Saxon contributions to medical science: Vaccination with Jenner, anaesthetics with Simpson, antiseptics with Lister, were cited as examples. In the course of the evening Dr. Robinson, the former honorary secretary, was presented with a handsome silver loving cup as a token of esteem and gratitude for his services to the society, which now entered into its twenty-first year of existence.

Obituary.

GEORGE JOSEPH COOPER, M.R.C.S., L.S.A.,

M.P. FOR BERMONDSEY.

Dr. Cooper, whose sudden death is attributed to the severe strain which the prolonged discussion on the Budget has imposed on members of Parliament, studied medicine at Leeds, Manchester, and University College, London. He was admitted a Member of the Royal College of Surgeons of England in 1867, and became a Licentiate of the Society of Apothecaries in 1871. He held the offices of Resident Medical Officer to the Poplar Hospital for Accidents, and to the Bristol General Hospital. He afterwards practised his profession in Bermondsey, and was Medical Officer to the Post Office at Rotherhithe. For many years past he had given a large part of his time to public work. He served on the London County Council from 1889 to 1906, resigning his seat on his election to the House of Commons, in which he represented the Bermondsey Division of Southwark. He died of hemiplegia on October 7th; the day before had been a peculiarly trying one for him, but he refused to leave his post till the House rose at 2 o'clock in the morning. Soon after his return home he was taken ill and died about midnight. He was 65 years of age.

Of Dr. Cooper's work on the London County Council, one who was intimately associated with him writes:

"He was a perfectly honest, straightforward man, fearless and hard hitting, but not unkind or wanting in geniality, even to his opponents, if they approached him properly. He was an original member of the London County Council, strongly supported the Pathological Laboratory, the *Archives of Neurology*, and the Pathologist; he also advocated the removal of the laboratory to London and the establishment of an hospital for acute mental diseases. He was mainly instrumental in the initiation and foundation of the Epileptic Colony at Ewell. Although never Chairman of the Asylums Committee, he was one of its most active and useful members. He gave evidence before the Royal Commission on the Feeble-minded, and attacked the Lunacy Commissioners and their doings. Possibly his evidence did not carry the weight it would if he had said what were facts only, but he put some embroidery, which lessened the value of undoubtedly valuable evidence. It was mainly due to Dr. Cooper that the dysentery inquiry was brought about, with the very best results. Such an investigation to be established and carried on required a man as chairman who was fearless and outspoken, besides having special knowledge. These qualities he possessed, for, besides being a medical man of long experience, good judgement, and great natural abilities, he was for a long time an active member of the Public Health Committee. For many years he was its chairman. I have heard that he served in the Franco-German war as a young man."

Dr. Cooper took a leading part in bringing about an improvement in the condition of common lodging-houses. He stated that he had personally visited every common lodging-house in Bermondsey. Another scheme which he was active in promoting was the provision of an adequate supply of ambulances for London.

In Parliament Dr. Cooper did some useful work. He introduced the Anaesthetics Bill; he also introduced the deputation which waited upon the Chancellor of the Exchequer with the view of obtaining a rebatement of the petrol tax in the case of medical practitioners, and to his efforts it is mainly due that this concession was made.

He was always most courteous and helpful to the representatives of the British Medical Association. He was an ardent politician, but he never forgot that he was a doctor, and he continued to practise his profession to the end. He used to relate with much glee his encounter with an undertaker, who remonstrated with him on his endeavours to improve the public health. "A good 18 per 1,000 is what *we* want," said the philanthropic tradesman. How, in the midst of his multifarious public work, Dr. Cooper contrived to attend to his patients is one of those mysteries the solution of which is doubtless to be found in Wellington's saying that it is the busiest men who make time to do things for which less strenuous workers cannot find a moment.

Dr. Cooper was a J.P. for the County of London.

At a meeting of the executive of the Bermondsey Liberal and Radical Association held on October 8th the following resolution was passed:

> That the Bermondsey Liberal and Radical Association expresses its deep and heartfelt regret at the death of its esteemed member, and the loss sustained by all whose cause he so ably championed for so many years. It desires to express its deepest sympathy with his wife and family, who have been so suddenly bereaved. It would also place on record its appreciation of his untiring energies in the cause of liberty and progress.

At the meeting of the London County Council on October 12th, the Chairman (Sir Melvill Beachcroft) said that great regret would be felt by members at the sad event. Dr. Cooper was a member of the Council from 1889 to 1906, serving for sixteen years on the Asylums Committee and thirteen on the Public Health Committee, of which he was chairman for five years. He was a member also of fourteen other committees. Dr. Cooper gave up work with them three years ago in order to take up parliamentary duties, and there was reason to fear that his assiduous attention to them led in no small measure to his death. Dr. Cooper was an indefatigable worker.

The funeral of Dr. Cooper took place on October 12th at Charlton from his residence in Southwark Park Road. Sir John Benn, M.P., Dr. Salter, the Independent Labour Party candidate for the coming by-election, and Mr. A. A. Allen, M.P., followed, and among the many wreaths were floral tributes from the local Gladstone Club, the Constitutional Club, and the Independent Labour Party, the Progressive Party on the London County Council, the Bermondsey Borough Council employees, the Bermondsey and Rotherhithe Trades and Labour Council, the London Carmen's Trade Union, and Mr. H. J. Glanville, who represents Rotherhithe on the London County Council. The workers of the Deptford Cattle Market sent a wreath, in the form of a broken harp, in token of their appreciation of the work done by Dr. Cooper for them in connexion with the agitation for the removal of the restrictions on imported cattle from Argentina. Amongst those who attended at the graveside was Mr. John Burns. Dr. Cox represented the British Medical Association.

EDWARD CLAPTON, M.D., F.R.C.P., F.R.C.S.,

LATE PHYSICIAN, ST THOMAS'S HOSPITAL.

Edward Clapton, who died on Tuesday, September 28th, was born on April 28th, 1830, at Stamford. His father, Jeremiah Clapton, held at different times important public appointments, such as mayor and alderman of the ancient borough, and steward of one of the manors of the late Marquis of Exeter. For about forty years he was Conservative agent for Stamford, and the members during that time included the late Sir Stafford Northcote, and the late Marquis of Salisbury, first as Lord Robert Cecil and then as Lord Cranbourne. Dr. Clapton inherited the strong Conservative traditions of his father, but, what was of much greater importance, the strong religious and Evangelical principles of both his parents. Being a member of a large family, Edward Clapton, who was the second son, started life without great prospects, and with his own career to make. He was educated at the Stamford Grammar School, where he was a contemporary of the late Bishop Ellicott of Gloucester, and the late Bishop Attlay of Hereford. At the age of 16 he was apprenticed to Mr. William Burdett, M.R.C.S., who found him a promising pupil; and though he had been delicate as a child, and not exceptionally clever as a boy, his thoroughness and retentive memory stood him in good stead.

He entered St. Thomas's Hospital (then situated at London Bridge) in 1850, and after a successful career as a student, in which he carried off many scholarships and prizes, he in due course was admitted a Member of the Royal College of Surgeons.

In 1857 he graduated as M.D.Lond., and in the same year he obtained the Fellowship of the Royal College of Surgeons. He became a Member of the Royal College of Physicians in 1858, and was elected to the Fellowship in 1870.

In 1857 he was appointed an Assistant Physician at St. Thomas's Hospital and Lecturer in Botany, and later on

in Materia Medica, and in this capacity he designed a map indicating the geographical distribution of plants possessing a therapeutic value.

He resided in the Eltham Road, but his consulting-rooms were in St. Thomas's Street, S.E., where he acquired a most successful consulting practice. As Physician to the South-Eastern Railway and to the London, Brighton, and South Coast Railway his services were often called into requisition, and he was a highly valued consultant, especially in the City and South of London. Much of his success in practice was due to his businesslike habits, which not only enabled him to carry on his professional work but to devote time to the many other interests which came into his life.

He was never a very strong man, and at a comparatively early age he was obliged to resign his position as Physician to St. Thomas's Hospital owing to the condition of his health.

Dr. Clapton was a man of deep religious convictions and consistent life; he was an earnest supporter of missionary and Church work, especially such as was of a distinctly Evangelical character. He was, however, most tolerant in his views, and had numerous friends among men highly placed in the Church of England, even though they belonged to another school of thought. His great hobby, which was a never ceasing interest to him up to the day of his death, was in the study of certain Biblical subjects. The principal of these was embodied in a volume published in the year 1878, under the title of *The Precious Stones of the Bible, by a Physician.* In order to secure material for this study, he obtained specimens of precious stones of all kinds from Bible lands, many of these being obtained for him after the most laborious search by grateful patients. He then made a minute investigation of the passages in the Scriptures containing symbolical references to these precious stones, connecting the stones in the breast-plate of the High Priest with the description of the foundations of the New Jerusalem. These must be read to be understood. A second edition of this work, with the author's name appended, was published in 1899.

As an instance of the remarkable character of these researches may be quoted his remarks concerning the ruby, which is distinguished by its blood-red colour; but the similarity of the ruby to blood is more close than mere resemblance, for the colour in each case may be attributed to the presence of oxide of iron. Again, the word for ruby in Hebrew is *Odem*, and means "blood red," and is composed of the same Hebrew letters as *Adam*, which means "taken out of red earth," which, the author says, is "an exact description of the ruby, which consists of pure alumina." From this he deduced most important lessons illustrating the Scriptural doctrine of the Atonement. But although his researches were undertaken from the Biblical standpoint, he was always on the look-out for other lessons which might be drawn from them, and in recent years he gave much thought to problems connected with the chemical constituents of the human body, and particularly the existence of certain derivatives of alumina in varying quantities in the body. This led him to formulate certain theories as to the origin of cancer, and his essay on this subject was submitted to the Cancer Research authorities.

In his search for Biblical curiosities he also obtained others of special medical interest. One of these he recently presented to the museum of the Royal College of Surgeons, consisting of two branches and a bundle of twigs from the plane tree in the island of Cos, under the shade of which Hippocrates lectured on medicine from a marble seat close to the tree, which is still in existence. Moreover, the late Dean Farrar believed that it was not improbable that St. Luke, "the beloved physician," rested under the shade of the tree hallowed by its connexion with the Father of Medicine. Dr. Clapton was also the author of a *Life of St. Luke*, published by J. and A. Churchill, dealing especially with the medical aspects of that evangelist's life and work.

A casket composed of the different woods mentioned in the Bible, with a representation of a branch of each tree carved on each panel, was made for him by a celebrated firm of ecclesiastical art workers, in order to contain his collection of precious stones, and this was exhibited for the first and only time in public at the Ecclesiastical Art Exhibition of the Church Congress in London in 1899, where he gave demonstrations on the casket each day. He shrank, however, from any public display and rarely spoke in public, and the treasures of his Biblical museum were only seen by those who visited him in his home at Lee. Here, however, he delighted to receive small audiences of friends who would be glad to listen to his interesting explanations of subjects to which most people have given little thought. In his way he may be regarded as having been a Biblical critic from the scientific point of view, and the result of his researches was to give him unbounded faith in the inspiration of the Scriptures. He wrote in the preface to the first edition of his book, *Precious Stones of the Bible:*

> One thing is certain, that the more any part of the Bible is minutely and critically examined, and studiously compared with other parts, the more one is struck with the intimate and harmonious connexion existing between the whole of the Scriptures from the beginning to the end, and convinced that by no possibility could such a book have resulted from the invention and ingenuity of any number of uninspired men, be they the wisest and most subtle of mankind.

These studies brought Dr. Clapton into close contact with the leaders of the Palestine Exploration Fund, with the Victoria Institute, and with the London Society for Promoting Christianity Among the Jews, of which he was Honorary Physician. He was one of the earliest members of the Medical Prayer Union; the Chairman of Marshall's Trustees, which gives grants for church building and endowments, and was connected with many other similar institutions. He was a member of the Athenaeum Club, where he enjoyed the friendship of many distinguished men; he was also a Fellow of the Royal Geographical Society, of the Linnaean Society, and the Zoological Society as well as various medical societies.

He was Consulting Physician to the Miller Hospital and other hospitals in the neighbourhood of Blackheath. His wife, who predeceased him, was Mary, eldest daughter of the late Mr. John S. M. Churchill, the well-known medical publisher.

His son, the Rev. E. Louis C. Clapton, is the rector of Lee, and his elder daughter married the Rev. E. T. Clark, son of his old friend and colleague, the late Mr. Le Gros Clark, F.R.C.S.

Dr. Clapton was a devoted husband, an affectionate father, and a faithful friend to all who had the privilege of coming into close touch with him. Modest and retiring by nature, he exercised a remarkable influence, and has left behind him a fragrant memory which belongs only to those who have faithfully served both God and man throughout a long and useful life. He was buried at Stamford, in the family vault, on Saturday, October 2nd.

WILLIAM RIVERS POLLOCK, M.D.Cantab., F.R.C.P.,

OBSTETRIC PHYSICIAN TO THE WESTMINSTER HOSPITAL.

William Rivers Pollock, whose death occurred, after a very short illness, on October 5th, was the fourth son of Mr. G. F. Pollock, formerly Senior Master of the Supreme Court and King's Remembrancer. He was educated at Haileybury and Trinity. Whilst at Cambridge he distinguished himself in athletics, representing the university in the hurdles in the inter-university sports, and establishing a record (16 secs.) which was not lowered for many years. It was at this time he suffered the first of many attacks of thrombosis which resulted eventually in the obliteration of the inferior vena cava and necessitated his living for years an extremely careful life. Indeed, it was only during the last two or three years that he had been able to indulge in any but the mildest forms of outdoor exercise, and only latterly was he able to stand the strain of a long afternoon's operating.

From Cambridge he went to St. George's Hospital, and took the M.R.C.S. in 1881. He held house appointments at St. George's and at Addenbrooke's, where he came under the influence of Humphry, whose teaching he always held in the highest esteem. He graduated in 1888, spent the year 1889 at the Rotunda in Dublin, and, returning to London, became a Member of the College of Physicians and began practice as an obstetrician and gynaecologist. He was chosen a Fellow of the Royal College of Physicians in 1901, and took the M.D.Camb. in 1903.

Besides other appointments at an earlier period of his career, he was, at the time of his too-early death, Obstetric Physician and Lecturer on Diseases of Women to the Westminster Hospital; Senior Physician to Queen Charlotte's Lying-in Hospital; Professor of Midwifery to the Army Medical College, Millbank; Examiner in Midwifery and Diseases of Women to the Universities of Cambridge and London and to the Conjoint Board of the Royal Colleges.

Handicapped to some extent by the physical defect in his circulation, Dr. Pollock had been obliged to develop the obstetric side of his practice rather than that of operative gynaecology, although latterly he was able to undertake a full share of operations both in hospital and in private practice. His skill and experience as an obstetrician secured high appreciation from the staff and students both at Westminster and at Queen Charlotte's. Appreciated by his students, respected and esteemed by his colleagues, beloved by his intimate friends, Dr. Pollock endeared himself to all who knew him well. He was possessed of an exceptionally acute sense of humour, of a dry but very ready wit, and of powers of mimicry which were remarkable in themselves, but still more remarkable for the unfailing kindliness of their employment. His gentleness with children, his invariable kindness and consideration for his younger colleagues, afforded good sidelights upon his character. His sound judgement and shrewd tact were always at the service of his friends, and will be sorely missed in the various committees upon which he sat. In his capacity as Treasurer of the Westminster Hospital Medical School he had rendered great services to successive Deans.

Dr. Pollock succumbed to a severe septicaemia, the origin of which was quite obscure, and the only overt evidence of which was a tonsillar abscess. He leaves a widow, one son who is now at Cambridge, and a daughter.

The first part of the funeral service was held in the chapel of the Westminster Hospital. It was conducted by the Rev. Bertram Pollock, D.D., M.V.O., Head Master of Wellington College—a brother of Dr. Pollock—assisted by the Rev. Ewart Barter, incumbent of Grosvenor Chapel, where Dr. Pollock had been a regular attendant and office-bearer, and by the chaplain, Mr. Fase. The service was attended not only by a large number of relatives and personal friends, but also by many well-known members of the staffs of London hospitals.

COLONEL GEORGE MCBRIDE DAVIS, C.B., D.S.O., Indian Medical Service (retired), died at Wimbledon on October 4th, aged 63. He was a son of the late Dr. W. A. Davis, of Newry, Ireland, and was educated at Queen's College, Belfast. He joined the Bengal Medical Department as an Assistant Surgeon, April 1st, 1869, and became Brigade Surgeon-Lieutenant-Colonel, January 17th, 1895. He retired from the service in 1902. His war record included—the Mahsood Wuzeeree expedition in 1881; the first Miranzai expedition in 1891; the Hazara expedition in 1891 (medal with clasp); the Waziristan expedition in 1894-5 as Principal Medical Officer with the Delimitation Escort (mentioned in dispatches, clasp, and granted the D.S.O.); he was Principal Medical Officer of the 2nd Division in the Tirah expedition in 1897-8, being present in the action of Dargai, at the capture of the Sampagha and Arhanga Passes, and in the operations in the Bara Valley (mentioned in dispatches, medal with two clasps, and appointed C.B.); was Principal Medical Officer with the China Expeditionary Force in 1900 (mentioned in dispatches, medal with two clasps); and again as Principal Medical Officer of the force sent to Waziristan, on the North-West Frontier of India, in 1901-2 (mentioned in dispatches, clasp). In July, 1900, he was granted the reward for distinguished service.

DEATHS IN THE PROFESSION ABROAD.—Among the members of the medical profession in foreign countries who have recently died are: Professor Anton Dohrn, founder and director of the Zoological Station at Naples, aged 69; Dr. Heurteaux, formerly Professor of Clinical Surgery in the Medical School of Nantes; Professor Ludwig Katz, the well-known otologist of Berlin, aged 61; Dr. Kornel Chyzer, head of the Sanitary Department of the Hungarian Ministry of the Interior; Dr. Henry C. Chapman, Emeritus Professor of Physiology and Biology in the Jefferson Medical College, Philadelphia, aged 64; Dr. Gyula von Thonobanya Elischer, Professor of Gynaecology in the University of Budapest; Dr. Leon Hendrix, founder of the Paediatric Policlinic of Brussels, and a leading authority on orthopaedic surgery in Belgium, to the literature of which he contributed largely, aged 56; and Dr. W. Thayer Smith, sometime Professor of Physiology, then Dean of its Medical School, Emeritus Professor of Physiology and Clinical Surgery, and author of several elementary textbooks, aged 71.

The Services.

ROYAL NAVY MEDICAL SERVICE.

THE course of instruction of the newly-entered surgeons at Haslar was brought to a close on October 6th by the distribution of prizes by Inspector-General Thomas D. Gimlette, C.B., R.N. The Gold Medal was gained by Surgeon A. A. Sanders, M.B., of Birmingham University. The Silver Medal was awarded to Surgeon K. H. Hole, of Guy's Hospital. The two above-mentioned officers took the first and second places respectively in the combined London and Haslar examinations. Three Navy Regulation Pocket Cases—prizes for subjects in which instruction is given at Haslar—were awarded to Surgeon A. A. Sanders, Surgeon M. P. Fitzgerald, and Surgeon G. F. Syms.

The following list shows the places gained by the combined marks of the London and Haslar examinations:

	Marks.		Marks.
1. Surg. A. A. Sanders, M.B.	5,178	8. Surg. J. Barrett, M.B.	4,399
2. Surg. K. H. Hole, M.B.	5,152	9. Surg. G. A. Jackson, M.B., B.A.	4,205
3. Surg. G. F. Syms	5,051	10. Surg. W. Miller, M.B.	4,167
4. Surg. H. F. Briggs, M.B.	4,944	11. Surg. R. P. M. Roberts	3,997
5. Surg. M. P. Fitzgerald, M.B.	4,873	12. Surg. A. G. Malcolm, M.B.	3,908
6. Surg. J. Hadwen, M.B.	4,479	13. Surg. H. C. Devas	3,749
7. Surg. J. S. Orwin, M.B.	4,423	14. Surg. H. W. Nicholls	3,642

INDIAN MEDICAL SERVICE.

PAY OF OFFICERS.

P.M.O. writes: The *suppressio veri* never did, and never will, benefit any one. The junior I.M.S. officer who communicates a tabular comparative statement, in your issue of August 28th, of the pay of R.A.M.C. and I.M.S. is either ignorant of the facts or suppresses them. I have neither time, nor you space, to confute his allegations seriatim. I merely mention one or two points. The pay of I.M.S. of all executive ranks is better than R.A.M.C.; of administrative ranks it is the same. The pension in all ranks is much better. There is no station hospital system in the native army, and no senior I.M.S. officer has charge of more than one hospital, let alone "as many as five." Your correspondent ignores the fact that every I.M.S. officer in charge of a regimental hospital receives a charge pay of Rs. 100 a month for 50 beds; if exigencies of service place him in charge of two, for a time, he get Rs. 200, and so on; therefore, his hypothetical senior officer in charge of five, aggregating 250 beds, would get Rs. 500, against the R.A.M.C. Rs. 180. The M.O. is not "the worst paid officer of his rank in the regiment," but the best. Finally, I would recommend this young officer to study his facts before rushing into print and committing himself to assertions which, in plain language, are sheer nonsense.

Another officer writes: In the native army the system of "station hospitals" practically exists only on paper; the majority of I.M.S. officers on the military side are serving in stations where there are no other I.M.S. officers, and so are their own senior medical officers. Even in big stations the I.M.S. senior medical officer does little or nothing in any hospital but his own, beyond keeping a central store of drugs.

Again, one must not compare the R.A.M.C. grade pay with that of the I.M.S. The junior R.A.M.C. man only gets his grade pay, while the I.M.S. man practically never draws grade pay alone. If he has less than seven years' service and no permanent appointment, he draws unemployed pay. Should he be in officiating charge of a regiment, provided he has passed his language examination, he draws grade pay + half the staff salary of the post, or Rs. 100, whichever is most, or unemployed pay if his Hindustani examination is still in front of him. To illustrate this, let us take the average course of the newly-joined man. On landing in India he draws Rs. 420 (unemployed pay) until he has passed his Hindustani examination. After attending his sanitary course he will soon be placed in officiating medical charge of a regiment. As soon as he has passed in the language he will draw Rs. 450 (350 grade + 100 staff). On promotion to captain this will become Rs. 500 and 550 after five years' service. He will eventually be given the permanent charge of a regiment, probably after some five to seven years' service, and will then draw grade pay + 150 staff (350 for a lieutenant-colonel). Supposing he has five years' service, this will give him Rs. 600 against the Rs. 475 of the R.A.M.C. man. The least a lieutenant-colonel

on the military side can draw is 1,250 a month (900 grade + 350 staff). This leaves out "exchange compensation allowance" (one anna in every rupee), horse allowance, and specialist allowances; also cantonment hospital allowances, which latter appointments are equally divided between the R.A.M.C. and the I.M.S.

It is on the civil side that the pay is now inadequate. On the average a man will have about five years' service before he will get on to the civil side, and then he will only be in temporary civil employ for his first three or four years, so that he will have eight or nine years' service before he becomes permanent. His pay while on the temporary list will be grade pay + 100 month acting allowance; once permanent, he gets consolidated pay. In addition to his pay, he will almost certainly have an extra allowance for the executive charge of the gaol. This will vary from Rs. 50 to Rs. 150 a month. The following will give an idea of the pay compared with the military side:

	Temporary Civil Employ.	Officiating Medical Officer to a Regiment.	In Permanent Charge of a Regiment.
Captain of five years' service:	450 (grade) 100 (acting) 50 (gaol) 600 Rs.	450 (grade) 100 (staff pay) — 550 Rs.	450 (grade) 150 (staff pay) — 600 Rs.
	Permanent Civil Employ.		
Major of twelve years' service:	750 (pay) 50 (gaol) 800 Rs.	Not likely to be officiating	750 (pay) 150 (staff) 900 Rs.

The larger stations—that is, those with the best chances for private practice, with the biggest district gaols, and possibly other extra appointments—go, naturally, to the senior men. The senior three or four men in each province are called first-class civil surgeons, and receive Rs. 100 a month extra pay, so that the best a first-class civil surgeon of the rank of lieutenant-colonel can draw is Rs. 1,300. In addition, in some stations, a civil surgeon may make an extra Rs. 100 to Rs. 200 a month by the inspection of factories, but this is to be taken away from them in accordance with the recommendation of the Factory Commission. About two-thirds of the I.M.S. are in civil employ, and it is the future of those on the civil side which looks so gloomy. Probably nine out of ten men enter the I.M.S. with the idea of becoming a civil surgeon. The regimental medical officer has barely an hour's work a day, but if he really does his work the civil surgeon is a very busy man; and yet his pay is no more than he would receive had he remained in military employ. Compared with the pay of other services the inadequacy of that of a civil surgeon is at once apparent. The following are examples taken at random:

	Total Pay and Allowances.
Civil surgeon, nine years' service	...Rs.650
I.C.S., eight and a half years' service... ...	... 1,380*
Indian police, six years' service	... 700
Public Works Department, seven years' service ...	700

The civil surgeon's pay has apparently been based on the idea that he can supplement it with private practice. But every year sees new executive duties thrust upon him, and it is impossible to build up a private practice when a man is constantly being moved. There is one civil surgeon—the top man of his batch—who completed fifteen years' service without having been one year in any one station. A man who remains on the military side for the whole of his service is apt to grow very rusty in his professional knowledge; but a civil surgeon cannot help but keep more or less abreast of the times, especially in operative surgery, so that it is essential that the conditions of civil employ be such as to attract men. The civil surgeons form the reserve for the military branch—a very valuable reserve, consisting, as it does, of men accustomed to operating, often in conditions closely resembling those found on service.

* It is necessary to explain that I.C.S. men at eight and a half years' service are rarely more than joint magistrates on Rs. 700 per annum, though they may repeatedly act as magistrates on the higher pay noted for short periods.

DR. ALLAN KINGHORN, of the Liverpool School of Tropical Medicine, who recently returned from an expedition in North-East Rhodesia and Central Africa, where he investigated sleeping sickness, has now, on the instructions of the Secretary of State for the Colonies, proceeded to West Africa to continue his work, with the view of recommending measures for the prevention of the spread of the disease.

Letters, Notes, and Answers.

BRITISH MEDICAL ASSOCIATION AND BRITISH MEDICAL JOURNAL.

THE offices of the British Medical Association and of the BRITISH MEDICAL JOURNAL are at 429, Strand, London.

COMMUNICATIONS respecting Editorial matters should be addressed to the Editor, 429, Strand, London, W.C.; those concerning business matters, advertisements, non-delivery of the JOURNAL, etc., should be addressed to the Office, 429, Strand, London, W.C.

TELEGRAPHIC ADDRESS.—The telegraphic address of the EDITOR of the BRITISH MEDICAL JOURNAL is *Aitiology, London*. The telegraphic address of the BRITISH MEDICAL JOURNAL is *Articulate, London*.

TELEPHONE (National):—
2631, Gerrard, EDITOR, BRITISH MEDICAL JOURNAL.
2630, Gerrard, BRITISH MEDICAL ASSOCIATION.
2634, Gerrard, MEDICAL SECRETARY.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

CORRESPONDENTS not answered are requested to look at the Notices to Correspondents of the following week.

MANUSCRIPTS FORWARDED TO THE OFFICE OF THIS JOURNAL CANNOT UNDER ANY CIRCUMSTANCES BE RETURNED.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL, and not at his private house.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

M.B., M.R.C.S. desires details as to the vaccine treatment of acne vulgaris.

H. H. asks for information as to evil effects following the prolonged use of magnesium and sodium sulphate.

T. H. M. C. asks for information on the treatment of arteriosclerosis by high-frequency electric currents.

CH. asks for advice in the treatment of a case of chronic constipation in a neurotic woman, aged 26, in whom the usual remedies, including massage and diet, have been tried without much effect.

THURSTON desires to hear of an institution where a lady who has reached her 40th year could be trained as a nurse and obtain a certificate; her age is a bar at the institutions to which she has already applied.

BIMECONATE OF MORPHINE.

DR. WILLIAM PROWSE (Clifton) writes: Will you kindly permit me, through the medium of your columns, to inquire why it is that the most benign in its action, and the most generally useful of all the preparations of opium, namely, the solution of the bimeconate of morphine, is so rarely prescribed by medical men? The recipe for this particular preparation was given in the *British Pharmacopoeia*, 1885 edition, and was wholly expunged from the later edition of 1898. Why was this? Dr. Farquharson, in his *Guide to Therapeutics*, writes: "That it is an excellent preparation, and well-borne by patients who cannot take morphia in other forms." From a long experience I can confirm this statement, and should advise all who have not prescribed it to give it a thorough trial. In my opinion it is the ideal anodyne and hypnotic, without any of the usual drawbacks.

ANSWERS.

E. S.—The manufacture of casein is described and illustrated in *Casein: Its Preparation and Technical Utilization*, by Robert Scherer, published by Scott Greenwood and Son, 19, Ludgate Hill, London, E.C., price 7s. 6d.

RED CROSS does not say what is the subject of the lectures he proposes to give. If first aid, *First Aid to the Injured and Sick*, by Warwick and Tunstall, fifth edition (Bristol: Wright and Sons, 1s.), can be recommended. The fee to be asked must depend on circumstances; one guinea a lecture would be reasonable.

CONTINUOUS NEURALGIA.

DR. E. FRASER (Great Bedwyn) writes: "Seventy-two" will probably find that the high-frequency current will do much good in his case.

DR. J. SIMPSON (Belfast) writes, in reply to the query of "Seventy-two," to recommend a fair trial of pyramidon in 5-grain doses every six hours.

TREATMENT OF SYCOSIS.

SYCOSIS asks for advice in the treatment of a patient who has suffered from sycosis for five years. During the past nine months, while under our correspondent's care, various lines of treatment have been tried, including repeated injections of antistaphylococcus serum, without beneficial effect. He asks whether radium would be of value.

COLEY'S FLUID.

IRWELL.—Dr. Coley recorded the treatment of some cases of malignant disease by the fluid which bears his name in the *Boston Medical and Surgical Journal* of February 6th, 1908, p. 175. An article on the subject appeared in the JOURNAL of May 2nd, 1908, p. 1065. A brief report of a case reported by Major G. C. Spencer to the Clinical Section of the Royal Society of Medicine on March 12th, 1909, was published in the JOURNAL of March 20th, p. 721.

INFECTIOUS DISEASE IN DOCTOR'S HOUSE.

M. D. O. H.—(1) We believe it is customary for a medical practitioner in England, in whose household there is a case of scarlet fever, to make no alteration in the carrying on of his practice beyond taking the usual precautions against spreading the disease which he would take if he were attending an infected patient in another house. (2) A consulting room or surgery would be considered in this country as part of the house.

RUSSIAN FOOD.

S.—A qualitative analysis of the sample of "Russian Food" sent by our correspondent has been made; it consists principally of the flour of a cereal which appears to be rye, although it cannot be quite positively stated that some other variety of flour is not present. Mixed with this flour is a moderate proportion of potato starch. The protein present amounts to 7.45 per cent. (rye flour containing about 8 to 12 per cent.); fat and mineral matter are present only in traces, and there is no evidence of any other ingredient.

THE TREATMENT OF BRONCHIAL ASTHMA BY SERUMS.

A SUFFERER FROM ASTHMA.—We have recently published four communications on the subject of the treatment of asthma by serums. On July 31st, page 300, "M. K. A." reported recurrence of a previously disappearing asthma habit after a dose of diphtheria antitoxin (2,000 units), the well-recognized horse serum reaction being very marked. On August 7th, page 356, Dr. H. A. Clowes drew attention to a death ascribed to an acute attack of asthma precipitated by a prophylactic dose of diphtheria antitoxin (quantity not stated). On August 28th, page 580, Colonel Joshua Duke, I.M.S., reported that the apparent cure of asthmatic patients who had undergone inoculation, not with diphtheria antitoxin, but with Haffkine's antiplague serum, had made a strong impression on his mind. On October 2nd, page 1016, Dr. J. Aikman reported several cases of asthma which appeared permanently cured by diphtheria antitoxin. The dose he found valuable was 1,000 units, repeated at intervals. Larger doses, he found, increased expectoration to an uncomfortable degree. He advised the use of antidiphtheria serum in any case in which the condition of the heart was such that a mild bronchitis, should it occur, would not be likely to give material trouble.

BEE STINGS AND RHEUMATISM.

MR. LEWIS MACKENZIE (Tiverton).—The paper on the treatment of rheumatism to which our correspondent refers was published in the BRITISH MEDICAL JOURNAL of October 10th, 1908, p. 1056; and some further communications on the subject appeared in the issue of October 31st, pp. 1369 and 1409, and November 4th, p. 1531. With regard to the method of applying the treatment, we understand that there is a special apparatus which was exhibited at the Surrey Bee Keepers' Show held recently at the Crystal Palace. Dr. E. T. Burton of Birmingham has invented a forceps for holding the bees; the makers are Messrs. Philip Harris and Co., 144, Edmund Street, Birmingham.

Among the exhibits at the Dairy Show at the Agricultural Hall is an apparatus called a "Bee Vaccinator," made by Messrs. J. Lee and Son, Martineau Road, Highbury, London, N.

Another method is to let the bees out of a box or bottle one by one on to the window pane, where they can be seized by the wings and so applied with safety to the operator. With regard to the number of stings, Terc and others began with two or three stings repeated every two or three days, or perhaps one as the case goes on, and increased by one or two stings as tolerance is developed. As to site, the best is near or over the affected part if convenient; otherwise any part may be chosen less likely to be inconvenient or exposed to irritation; the loin would probably be a suitable place.

Mr. J. J. Adamson, of Beecroft, Birmingham, writes in the *Daily Mirror* of October 2nd: "My instruments consist solely of two pairs of wooden forceps and a wooden box to hold two dozen bees. The box is so constructed that I can take out one bee at a time without the least fear of it escaping. Then, by using one pair of forceps, I get one bee out, and with the other pair I get hold of it in exactly the right position for stinging. On applying the bee I see that it stings straight, and so gives the full benefit of the venom. Six to twelve bees are used at a time, and the treatment makes the patient all aglow. The venom is soon all over the system, and then the patient begins to feel as if he or she were being stung again." This, though uninviting when regarded as a mere sensation, "is a good sign, and may keep on for two hours." "Next day a slight irritation will set in, and last, perhaps, a couple of days or so." Then comes the second "dose" in about a week, and this is three-bee stronger. "On my third visit I inquire how the patient feels, and if he says he feels sickly on the day following the stinging, I apply the same amount; but, if not, then I apply a few more than the previous time."

LETTERS, NOTES, ETC.

THE TREATMENT OF ENDOMETRITIS.

DR. ALEXANDER DUKE (London, W.) writes: Having been present during part of the debate on the above subject at Belfast, but not having taken part in the discussion, preferring to place my thoughts on paper, I trust this note on the subject may be accepted. Acute puerperal endometritis should be quite unknown if the uterus were washed out by the attendant himself directly after the third stage is concluded, where any complication has been met with during the labour, and as a routine treatment, with hot saline solution, water previous boiled. "Prevention better than cure." The ordinary form of chronic endometritis, in my humble opinion, is curable by dilatation, blunt curette, swabbing of the cavity with carbolized iodine (Churchill's tincture), and subsequent drainage, not with gauze, which I consider useless, but with a spiral wire drainage tube designed by me fifteen years ago, and, I am pleased to see, copied (as stated by Professor Fehling) and used by Von Heff, etc. In chronic endometritis, I stated in a paper years ago on the subject, "the endometrium changes to a pyogenic membrane, and the uterus into a chronic abscess." Treat it then as such; remove the membrane, and drain with flexible metal tubes. Rest in bed is no doubt advisable in some cases of extreme debility, as recommended by Dr. McCann; but, as a rule, the patient is better up and about, assisting in the drainage by her movements and position, and less liable to consider herself an invalid. The poverty of some patients would quite taboo the rest cure, the suggestion of Dr. Tweedy. In cases of endometritis accompanied by flexions, the spiral wire drainage tube stem, by keeping the cervical canal straight and more open, will as a rule cure both lesions. I regret I cannot agree with Dr. Tweedy (as reported in the JOURNAL) that "to drain the cavity of the uterus *nothing is better* than a wick of iodoform gauze soaked in a 2 per cent. solution of carbolic acid" (italics mine). Dr. Tweedy's statement that "it must be confessed the treatment of endocervicitis by astringents applied on a Playfair's probe yields anything but satisfactory results" I quite agree with, and the explanation is obvious, as the medicament applied was never long enough in contact with the cervical canal to be of any use. I leave the small plug with the dressing I prefer in the cervical canal till expelled (as it is sure to be) by uterine action, and thus obtain far better results. The suggestion of Dr. Tweedy to "partially amputate the cervix, from which *great improvement always follows*" (italics mine), is about as sensible as removing part of the penis as a cure for chronic gleet. The consensus of opinion is, I think, in favour of dilatation, curetting with a blunt curette, and draining, but I wish to lay emphasis on the importance of the form of drainage tube which will on trial be found effective, and give better, quicker, and more lasting results, if not perfect cures, than any other form of uterine drainage with which I am acquainted.

A DISCLAIMER.

DR. G. NORMAN MEACHEN (London) writes: The altogether unwarrantable and offensive use of my name in connexion with a recent advertisement of Page Woodcock's Pills is yet another instance of the unscrupulous manner in which the names of medical men are exploited against their will, and which the profession seems utterly powerless to prevent until legislation steps in to its aid. I need hardly say that the firm in question has received instructions for the immediate withdrawal of the advertisement.

*** The advertisement, which is headed "Music and Meals," and is printed in the same type as a news paragraph, is, it must be admitted, rather ingenious. It begins by saying that Dr. G. N. Meachan had somewhere written that music stimulated digestion. It goes on to point out that everybody cannot afford to have an orchestra discourse sweet strains during meal-time, and then suggests that the pills would be a cheap and effective substitute.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Eight lines and under	0 4 0
Each additional line	0 0 6
A whole column	2 13 4
A page	8 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication: and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *Poste Restante* letters addressed either in initials or numbers.